

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1319. (Vol. XXVI.) 26th Year.
No. 14.

APRIL 5, 1934

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2
Telephone (2 lines), Holborn 3211 and 1884.
Telegrams: Truditur, Westcent, London.

Subscription Rates, Post Free.			
UNITED KINGDOM		OTHER COUNTRIES	
	s. d.		s. d.
3 Months ..	8 3	3 Months ..	8 9
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CONTENTS

	PAGE
Editorial Comment:	
The Race to Melbourne	317
A New Chapter Opens	318
The Avro 642	319
England-Australia Air Race	324
Short "Scylla"	327
Air Transport	335
Airport News	337
Airisms from the Four Winds	338
From the Clubs	340
Royal Aero Club Official Notices	342
Royal Air Force	343
Air Post Stamps	344

EDITORIAL COMMENT



PROSPECTS of entries for the so-called MacRobertson air race from Great Britain to Melbourne are growing interesting. We write "so-called" advisedly, for it does not call for a profound knowledge of the Gaelic language to know that Mac means "son of," and therefore the expression MacRobertson is a very weird instance of tautology, which we are surprised should ever have been approved by that eminent Australian Scot, Sir Macpherson Robertson. However, "the play's the thing," and the name matters little so long as the contest produces good flying. Whether it will have that result is a question which is daily growing in interest.

On another page of this issue we publish a map which shows the great circle route of the course between the various compulsory stops, with an explanatory article on the difficulties which face any competitors who decide to eschew thoughts of safety first, and to fly as straight as they can for the finishing line. We believe that there are plenty of pilots who are ready to delight the heart of Lord Mottistone by adopting the motto "Fear and be Slain." Unfortunately, the history of flying shows that fear has not been the only, or the main, cause of air disasters. The map which we publish shows that the actual great circle route would take the machines over some really desperate country. On such a small scale the comparatively easy and safe route followed by Imperial Airways does not seem very far away, but each divergence from the great circle course to reach the cut-and-dried route would mean a sacrifice of anything upwards of 100 miles, and on such a race even the half-hour or so which is represented by 100 miles is not lightly to be thrown away. For instance, the Gangetic plain in India is one of the great flat places of the world, and all round Allahabad one thinks of the air pilot as being metaphorically in clover. That is because ordinary business would naturally take him from Allahabad straight on to Calcutta. It is rather surprising to see that the great circle course from Allahabad to Singapore

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1934.
Apr. 7-10. Forum Club Aviation Exhibition.
Apr. 16, 23, 30. "Gyroscopes." Series of Lectures by Prof. J. G. Gray before Royal Society of Arts.
Apr. 19. "The Houston-Mount Everest Expedition." Lecture by Air Commodore P. F. M. Fellowes, before R.Ae.S.
Apr. 22. Northamptonshire Ae.C. Tea Party and Opening of New Club Buildings.
Apr. 26. "Landing in Fog." Lecture by Dr. Rud Stussel before R.Ae.S.
Apr. 27-May 6. International Aero Show, Geneva.
May 17-June 2. Royal Tournament, Olympia.
May 21. Guild of Air Pilots Garden Party.
May 24. Empire Air Day.
May 27. Deutsch de la Meurthe Cup.
May 31. "Stalling." Wilbur Wright Memorial Lecture, by Prof. B. Melvill Jones, before R.Ae.S.
June 1. Entries close at 12 noon for London-Melbourne Race.
June 2. Brooklands Air Race Meeting.
June 3. London Aeroplane Club Garden Party, Hatfield.
June 9. Reading Ae.C. Annual "At Home."
June 16. R.A.F. Reserve Flying Club Annual Flying Display, Hatfield.
June 23. Lancashire Ae.C. Air Display, Woodford.
June 30. Royal Air Force Display, Hendon.
July 3-9. 4th International Congress for Applied Mechanics, Cambridge.
July 7. Opening of Leicester Airport.
July 13-14. King's Cup Race. Start and finish at Hatfield.
July 21-22. French Grand Prix.
July 28. Bristol and Wessex Ae.C. Garden Party.
July 29. London-Sherburn Race (York County Aviation Club).
Aug. 25. Liverpool and District Ae.C. Garden Party, Speke Aerodrome.
Aug. 28-Sep. 16. International Touring Competition, Poland.

takes the pilot over the mass of considerable hills in the Central Provinces. On leaving the coast near Puri the pilot who sticks to the great circle will have little but sea before him until he reaches the Australian coast at Darwin. Occasionally he will cross a corner of a peninsula or island, but there will be very much more water than land under his wheels. He will need a very reliable engine.

This train of thought leads to speculation as the chances of finding and rescuing any who may fall by the way. The tragedy of Bert Hinkler has taught us that even in Europe a crash may be completely lost for months. This course passes over countries much wilder than the Italian Apennines. Large tracts of Turkish and Persian territory lie along the direct course, and neither of those countries welcomes foreign airmen unless their papers are very much in order. We wonder if all arrangements will be made to provide the competitors with such necessary papers. Great inconvenience might result if the organising authorities made the easy assumption that engines will not fail. Even if they do not, petrol may run short, for keen racing men will try to get the utmost out of their tanks, and each stage, to Baghdad, Allahabad, Singapore, Darwin, is over 2,200 miles. Rescue will presumably be considered the work of the Royal Air Force wherever there is a squadron within range. There are no squadrons stationed anywhere between the North West Frontier of India and Singapore. If anyone is supposed to have come down in the sea, search is certain to be made, and such search is a task for seaplanes. There is one seaplane squadron at Malta, and another at Singapore. The latter has four "Southamptons," which is not a very adequate preparation for a hurried search of the seas up to Puri in the one direction and to Darwin in the other. In fact a contemplation of the unpleasant possibilities of this route shows up the extreme paucity of our seaplane power in the East. Of course there is the possibility that the Admiralty might order a carrier to pass through the Canal and cruise eastward. The Admiralty is not usually very prone to send naval ships hunting for rash and unfortunate airmen. Certainly the *Eagle* went to the rescue of Commander Franco when he was lost on the Atlantic, but he was a foreigner. If no Americans enter for this MacRobertson race, and it is by no means certain that any will do so, we can hardly fancy the Admiralty moving any carriers about in anticipation. Nor is it even probable that any such step would be of any use. As we said before, there is a great deal of sea to be covered.

The prize offered by Sir Macpherson is munificent, but the cost of entering for this race will not be light. The "also-rans" will be considerably out of pocket, and even the winner will hardly make a fortune out of his success. That is why we do not anticipate a large foreign entry. We do hope, however, that a sufficient number of machines will be entered to lend real interest to the race. If things go well the event will set a new standard in our ideas of long-distance speed. The actual winning machine may perhaps be a racing freak, but the contest ought to improve the breed of aeroplanes, and not only set a new standard, but also teach valuable lessons to our firms of aircraft designers. If the race produces that result, it will be a very worthy celebration of the centenary of Melbourne city and the State of Victoria.

The Easter holidays have seen two important announcements which affect internal air lines. Railway Air Services, Ltd., have issued their preliminary programme of internal air lines for the coming

A New Chapter Opens

summer, and tomorrow, Friday, the Prime Minister, the Air Minister, and other notabilities will attend at Speke aerodrome, Liverpool, to witness the inauguration of a new air service, Glasgow-Belfast-Liverpool-London by Midland & Scottish Air Ferries, Ltd.

The programme of Railway Air Services is not too ambitious. It proposes only three lines for the present: (1) London-Isle of Wight; (2) London-Belfast-Glasgow, and (3) a Western route, Plymouth-Cardiff and/or Bristol-Birmingham. The first is to be run by arrangement with Spartan Air Lines, Ltd., who developed this service successfully last summer. We welcome this development, as showing that the powerful new company does not intend to be ruthless in sweeping away private companies who have deserved well of the public and earned sympathy by their enterprise in breaking (so to speak) new ground and showing a capacity for good management. Their machines will fly on as before, with the comforting knowledge of large resources behind them, on which they can fall back if Winter Comes. The Western route is much the same as that which Imperial Airways operated for the Great Western Railway last year. That service made a loss last year. Its renewal this year depends on the making of satisfactory arrangements with owners of aerodromes on the route. It is a line which, on the face of it, ought to pay, for it fulfils the condition of crossing an area (in this case the Bristol Channel) which railways cannot cross except at vast expense. We trust, however, that the efficient service (Western Airways, Ltd.) started by Mr. Norman Edgar between Bristol and Cardiff will be able to survive and reward its founder for his enterprise and good organisation.

There remains the route London-Belfast-Glasgow. At first glance there would seem to be somewhat of a mystery about this. On the one hand it is definitely announced that Railway Air Services are to run this for the L.M.S. Railway. On the other hand, Midland & Scottish Air Ferries are opening the service to-morrow. This looks like rivalry. But surely if a transport war were in prospect, the Prime Minister, to say nothing of the Air Minister and the Director of Civil Aviation, would not shed the light of their countenances upon one of the competitors in advance! That sort of thing is not done. It is all the more unlikely when the competitor not so favoured is so closely connected with Imperial Airways, the company formed at Government instigation and the recipient of Government subsidies. Certainly the Government is only concerned with the overseas operations of Imperial Airways, but if Midland & Scottish Air Ferries were really to be rivals of Railway Air Services on this route, such an action by the head of the Government would seem to be an unfriendly act. But equal favours may be destined for the other service.

We cannot believe that the situation really is as it appears on the surface. There must be some explanation, and we feel sure that the matter will soon be cleared up. In the meantime we may express our satisfaction that aircraft are to undertake the regular crossing of the Irish Sea.



"Head on" the Avro 642 displays the clean lines which account for its fine performance. (FLIGHT Photo.)

AVRO 642 COMMERCIAL MONOPLANE

A development of the earlier Avro monoplanes, which should go a long way towards making commercial aviation a sound economical proposition

BUILT to the order of that northern air transport pioneer, Mr. John Sword, the Avro 642 is an extremely interesting aeroplane and a considerable advance on similar machines.

Mr. Chadwick, Avro's chief designer, has, despite the size of the 642, managed to provide excellent, positive and comparatively light controls. A short trial showed us that the 642 has not the characteristics of pronounced aileron drag, sluggish controls unharmonised as regards force required for operation, and similar undesirables often to be found in high-wing large monoplanes. Furthermore, the 642 does not float when landing, and when it is down it is, so to speak down, without there being any question about it. Naturally, being a clean job, its run is fairly long and fast, but it is by no means unduly so, and when the machine is loaded the brakes may be used to shorten the run as desired. The take-off is good, and we found no difficulty at all in holding the machine straight with one engine throttled back.

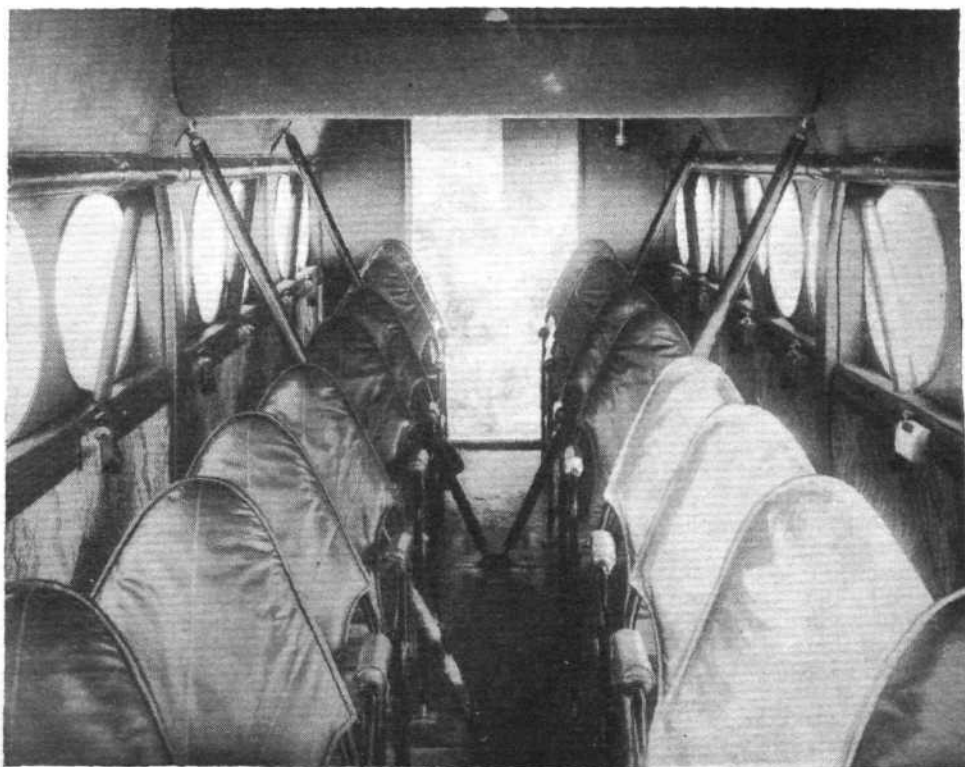
A glance at our table of performance figures, figures provided by the makers which are substantiated by official Air Ministry tests at Martlesham Heath, shows that the Everling High Speed figure is over 22. This is quite high for a twin-engined monoplane, and is a criterion of the cleanliness of design which has been achieved.

From the passengers' point of view, the 642 is good. The chairs are comfortable, and Rumbolds have made their usual excellent job of the interior upholstery. Mr. Sword has chosen a 16-seat layout with red imitation leather, relieved on the cabin walls with a red and grey brocade. This certainly has had the effect of making the cabin bright and cheerful. This effect is helped by the deep and well placed windows situated at the correct height for the passengers, so that they do not have to strain about when they wish to look out while sitting down. Naturally, with this number of passengers placed in two rows, there is not a superabundance of leg room, but the arrangement has a great advantage in that it gives every pas-

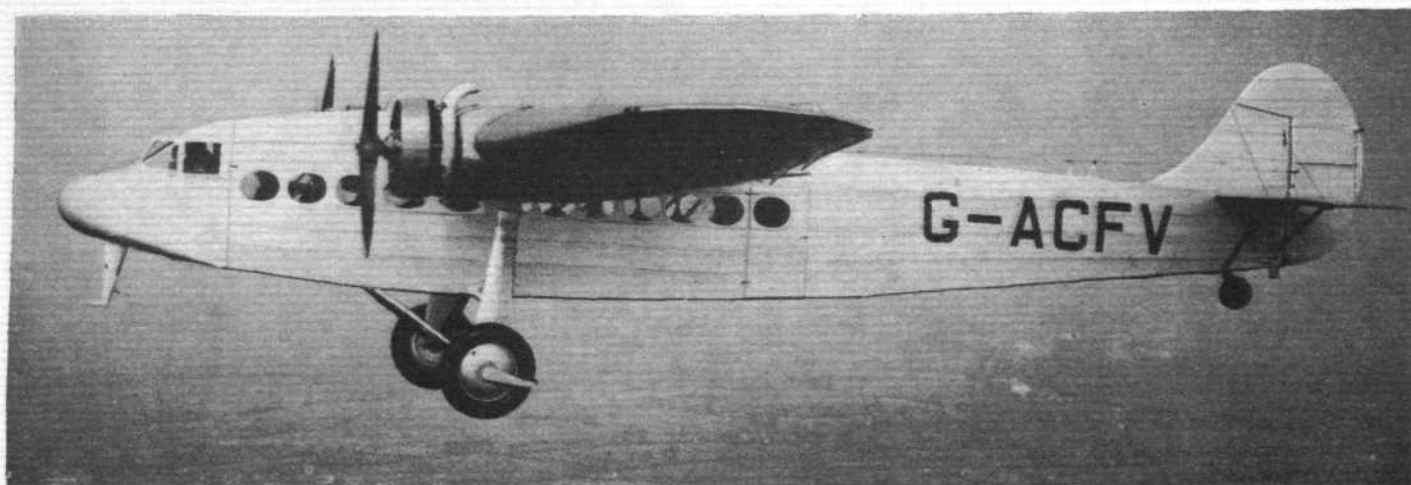
senger a window seat—an advantage, the value of which it is impossible to calculate. It does seem a pity to us that this particular machine is not provided with windows that can be opened. This is always appreciated by passengers. Many times when travelling in large passenger-carrying aircraft we have noted how much they prefer to be able to get fresh air through a window when the cabin is a bit stuffy. True there is ample provision for fresh air through the usual individually controlled ducts, but this never seems quite the same as being able to get a draught directly through an open window. We understand that sliding windows can be fitted if required.

The fact that the cantilever wing, with its deep spars, is set right down on to the cabin means that the two spars take up a good deal of head room, but in the 642 this has been utilised to house the battery for the lighting, and other electrical equipment.

The passenger cabin is easy to get into, as a large step has been designed which folds up into the door space when the door is closed and can be let down at once when required after landing. At the rear end of the cabin there is a well-fitted lavatory, and aft of that again is the luggage compartment, while racks for light luggage run the



Inside, Mr. Sword has had this machine upholstered in red and brown, which gives a pleasing, cheerful effect. (FLIGHT Photo.)



AVRO 642 COMMERCIAL MONOPLANE

Two Armstrong Siddeley "Jaguar" engines giving 460 h.p. each, at 2,000 r.p.m.

	DIMENSIONS	ft.	in.	m
Span of wing	71	3	(21.72)
Height overall	11	6	(3.51)
Length overall	54	6	(16.61)
Wheel track	15	10.5	(4.85)
Engine centres	17	0	(5.18)
Mean chord	10	7.6	(3.24)
Aspect ratio	6.96	to 1	
Incidence	0	deg.	
Dihedral	1.5	deg.	

	AREAS	sq. ft.	m ²
Main plane with ailerons	728.0	(67.63)
Ailerons, total	44.6	(4.14)
Tail plane and elevators	87.5	(8.13)
Fin	14.1	(1.31)
Rudder	24.8	(2.30)

	WEIGHTS			
	600 miles (965.61 km) range		350 miles (563.27 km) range	
	lb.	kg	lb.	kg
Tare weight	7,360	(3 338.44)	7,360	(3 338.44)
Radio equipment	90	(40.82)	90	(40.82)
Crew, two	340	(154.22)	340	(154.22)
Fuel 194 gall. (881.91 l)	1,494	(677.67)	112 gall. (509.15 l)	862 (391.00)
Oil 14 gall. (63.64 l)	136	(61.69)	8 gall. (36.37 l)	78 (35.38)
Passengers, twelve, 1,920	(870.89)		sixteen 2,560	(1 161.19)
Baggage, etc.	450	(204.41)	500	(226.80)
Pay load	2,370	(1 075.01)		3,060 (1 387.99)
Gross weight	11,790	(5 347.64)		11,790 (5 347.64)
Maximum permissible weight				11,800 lb. (5 352.37 kg)

	LOADINGS AND RATIOS
Wing loading	16.2 lb./sq. ft. (79.09 kg/m ²)
Power loading	12.8 lb./h.p. (5.80 kg/hp)
Ratio of gross weight to tare weight	1.60 to 1

	PERFORMANCE	m.p.h.	km/h
Maximum speed at sea level	160 (257.49)	
Maximum speed at 5,000 ft. (1 524 m)	154 (247.84)	
Maximum speed at 10,000 ft. (3 048 m)	149 (239.79)	
Stalling speed	64 (103.00)	
Cruising speed, 1,900 r.p.m. at 1,000 ft. (304.8 m)	135 (217.26)	
Best climbing speed	94 (151.28)	
Best gliding speed	85 (136.79)	
Best gliding angle	1 in 9.3	
Everling High Speed Figure	22.05	
Ratio of maximum speed to stalling speed	2.5 to 1	
Take-off run, wind 5 m.p.h. (22.35 m/sec)	300 yd. (274.32 m)	
Landing run, wind 5 m.p.h. (22.35 m/sec)	270 yd. (246.89 m)	
Service ceiling	15,500 ft. (4 724.4 m)	
Rate of climb at sea level	970 ft./min. (4.93 m/sec)	
Climb to 1,000 ft. (304.8 m)	1.2 min.	
Climb to 5,000 ft. (1 524 m)	6.4 "	
Climb to 10,000 ft. (3 048 m)	16.6 "	
Fuel consumption 43 gall./hr. (195.48 l/h) at 135 m.p.h. (217.26 km/h) at 1,900 r.p.m. at 325 h.p. per engine.			

This side view shows the ample window area provided for the passenger cabin which makes the inside particularly light and airy. (FLIGHT Photo.)

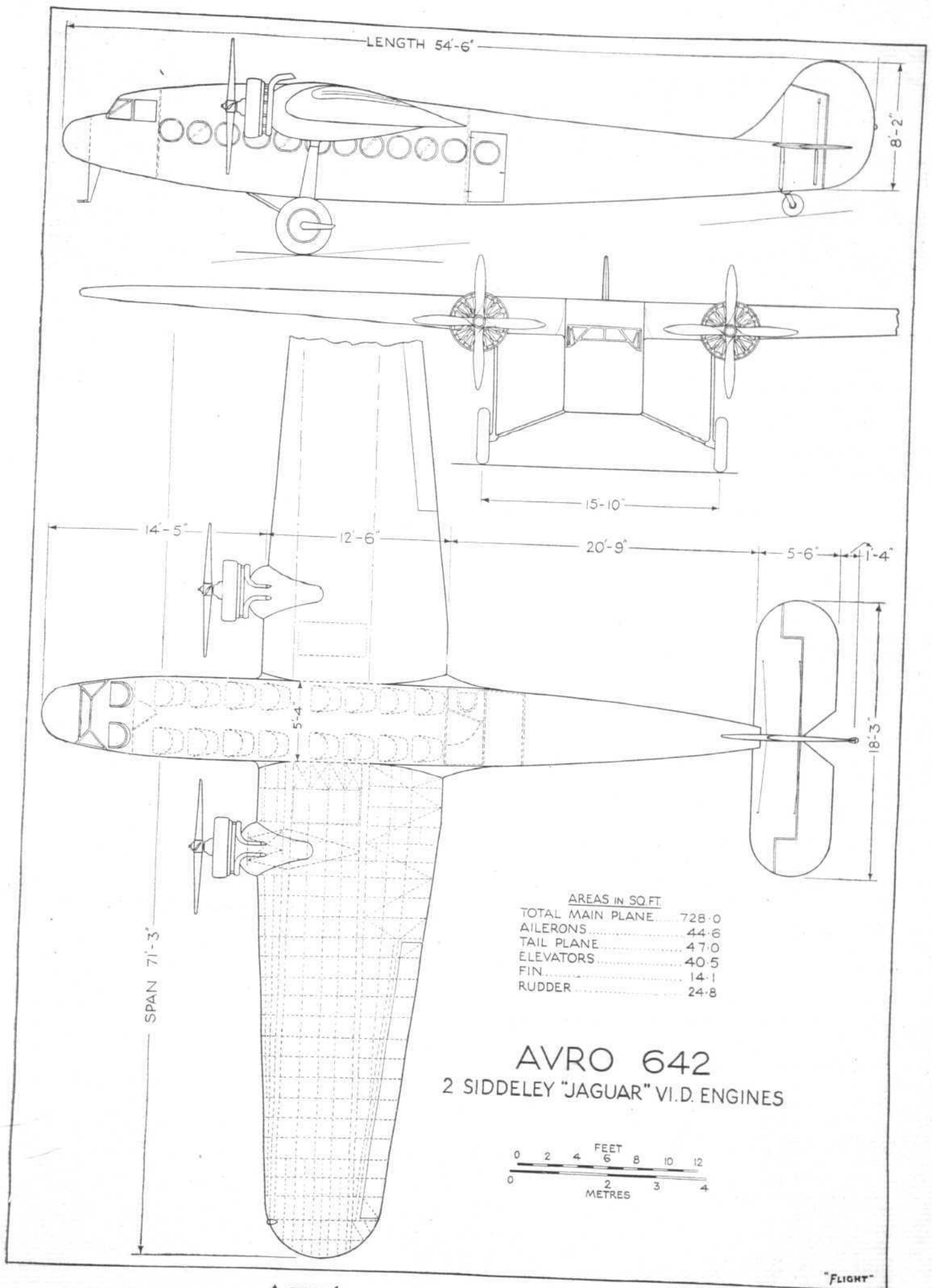
full length, each side, of the cabin.

The pilots' cockpit is separated from the main passenger cabin by a bulkhead and door, so that all draught is excluded, and the passenger cabin may, in cold weather, be adequately heated by the heating system, consisting of a hot air supply from a jacketed exhaust pipe.

The pilots' cockpit is well arranged, with full dual flying controls, centrally placed engine and wheel brake control levers and, a point which is not so common, the tail trimming wheel is fitted to the side of the throttle control lever mounting, so that either pilot can get at it easily. The usual range of instruments were on the dashboard, but, as in all large aircraft, this is a matter which differs with each owner. The windows around the pilots' cockpit are adequate in so far as forward and side view goes, but we felt that they could with good effect have been made deeper, especially in front. With the seats as they are, the unglazed part of the roof came too low for our liking, with the result that we were constantly bending down to increase the upward view. For the same reason we should have liked to see more cello or glass in the cockpit roof. There was only one round cello panel, which was hardly sufficient for absolute comfort when circling in to land. Possibly the model we tried was not completely finished, but as we saw it there was no provision for the pilot's maps, gloves and other small etceteras. No doubt weight and cost have to be cut in every way, but it seems a pity that the pilot should not be made really comfortable, because although he is non-productive as regards revenue, he has, after all, in this case the care of sixteen people on his hands.

The wheels and wheel brakes are the latest Dunlop types, and the latter make handling the 642 on the ground a simple matter. The central control lever, regulating the air pressure supplied to the brakes, is handily placed just below the throttle levers, and the pressure gauge unit is on the dashboard in front of the left-hand seat, where the chief pilot normally sits. (The Dunlop brakes were described in FLIGHT for June 24, 1932, page 579.)

Each "Jaguar" engine is fed from an individual fuel tank of welded aluminium—normal capacity 97 gall. (440 l)—by



A general arrangement drawing of the Avro 642.



Since we published a photograph some time ago, the nose of the 642 has been re-designed, giving it a cleaner entry and enhanced performance. (FLIGHT Photo.)

by reducing the number of passengers and increasing the fuel tankage, at the rate of 60 miles cruising range per passenger.

Liberal instrument equipment is provided as standard and items like a Turn and Bank Indicator, Compass, Clock, and all the usual flying and engine instruments are included in the specification.

Coming now to structural considerations, it will be seen that in general the 642 is similar to the earlier Avro monoplanes and that qualities like economical maintenance and long life have, in particular, been retained.

The wing is basically like the Avro Ten, the boxed plywood and spruce spars being continuous from tip to tip. The ribs are also built up of plywood and spruce and, from the rear spar

forward the wing is completely plywood covered; moreover, this plywood has fabric glued over it as a final and lasting weather protection. Aft of the rear spar the wing is made in the form of a detachable section and is fabric covered; this is done so that transportation of the large wing may thereby be simplified.

The ailerons, of the Frise balanced type, are long and have a narrow chord. They are, like the wing, of spruce construction with a plywood leading edge and fabric covered. Both the ailerons and the tail control surfaces are operated through a tie rod system which incorporates flexible cables running over pulleys where necessary, thus obviating the use of rubbing contacts on blocks of fibre.

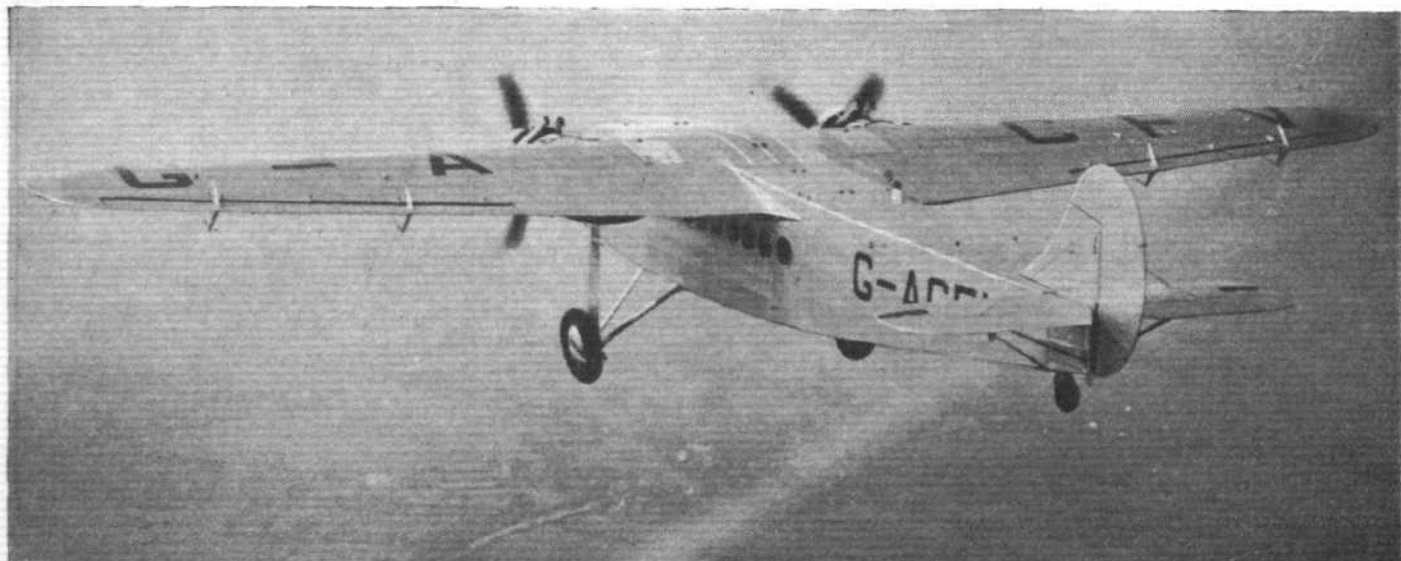
All the tail unit surfaces are of welded steel tube construction with doped fabric covering. The elevators have horn balances of the inset type while the rudder is balanced by means of a small auxiliary surface inset in the trailing edge, hinged to it and controlled by a lever fixed to the fin. The tail plane is adjusted to trim the 642 through non-reversible screw gearing acting on the rear spar and operated by a wheel in the pilots' cockpit.

The fuselage is a single unit of welded steel tubes. In some cases the bracing is by diagonal tubes, in others by steel wires. The tubes used are of specification, D.T.D.89a, and are hermetically sealed, thus obviating any possibility of internal corrosion.

The floor of the cabin is particularly rigid and strong

dual engine-driven fuel pumps, through Petroflex tubing and the standard fuel filters. The tank cocks are controlled by levers situated on the cockpit roof above each pilot's seat. The engines are mounted on tubular welded steel mountings bolted to the front wing spars, with provision for carrying the torque loads back to the rear spars. Aluminium cowlings and Townend rings are used to keep the drag of the installation low, and the model under review had four-bladed wooden airscrews. The fuel tanks are mounted in the wing behind, and directly in-board of, each engine, and the oil tank is situated in front of it, forming a portion of the leading edge of the wing. A Kigass priming system is used and the engines are started by Siddeley Hand-Electric starters.

This article is mainly concerned with the 642 powered with two "Jaguar" engines, and the one which has just been delivered to Mr. Sword, in particular, but it should be noted that the same type can, if desired, be fitted with four Siddeley "Lynx" engines of 215 h.p. each. In this form the machine will have top speed at sea level of 150 m.p.h. (241.4 km/h) and a cruising speed of 127 m.p.h. (204.4 km/h), while the passenger accommodation then becomes twelve, for a range of 400 miles (643.7 km). Our table gives the maximum range of the "Jaguar" engined model for varying passenger loads when fitted with the standard fuel tanks, a lavatory and large baggage hold; it should be noted that the range can be increased



A three-quarter view showing the balanced elevators and generator mounting on the top of the fuselage. (FLIGHT Photo.)



Seen from this angle while flying over Woodford, the Avro 642 is particularly pleasing. (FLIGHT Photo.)

and replaces the diagonal bracing, in a horizontal plane, of the bottom of the fuselage. Each section is built up of spruce and plywood and can carry a load of 100 lb./sq. ft. (488 kg/m^2). The walls of the cabin are lined with sound-proofing material and panelled with plywood. The outside of the cabin is fabric covered. The pilots' cockpit is a separate unit of wooden construction bolted to the front of the fuselage.

Straightforward, simple and robust, sums up the undercarriage. Each side is a separate unit consisting of an axle hinged to the bottom longeron, a shock-absorbing strut carried up to wing which takes the landing loads through an oleo cylinder and the taxiing loads through a system of spiral steel springs; a radius rod in tension, being led forward of the axle forms the rest of the unit. The Dunlop wheels carry high-pressure tyres and streamline fairing can be fitted over them if required.

As we have already indicated the 642 has been designed as a commercial aeroplane in the fullest sense of the word. It is only natural, therefore, that matters affecting maintenance should have received the most careful consideration. It will be found that, for example, all lubricating points are easily accessible and fitted with grease-gun nipples. The fabric covering of the fuselage can readily be opened for inspection purposes, and wherever necessary sliding panels are provided. Furthermore, the Avro system of construction is of the kind which permits repairs to be performed without the necessity of elaborate workshop equipment. The wing is a straightforward matter and can be dealt with by any skilled carpenter, when he is shown how. The fuselage can be repaired either by welding or by an approved system of sleeving which has been evolved.

In a word, the 642 should prove in service to be a thoroughly practical, economical and efficient aeroplane.



Despite its loading and performance the Avro 642 has quite a low landing speed. (FLIGHT Photo.)



Tour of R.A.F. Units by C.A.S.

AIR CHIEF MARSHAL SIR EDWARD ELLINGTON, K.C.B., C.M.G., C.B.E., Chief of the Air Staff, left London on Friday, March 23, for a tour of inspection of R.A.F. units in Egypt, Iraq, Palestine and Malta. A tour of this nature by the C.A.S. is quite a rare occurrence. The tour

will probably last about a month. Sir Edward is travelling to Egypt by steamship. All visits to R.A.F. units, however, will be made in Service aircraft. On the return journey he will travel to Brindisi by Imperial Airways, thence to Malta in a Service machine, probably from No. 202 (F.B.) Squadron.

ENGLAND-AUSTRALIA AIR RACE

A short history of the donor of the prizes, and some notes on the route over which the pilots will have to fly

SIR MACPHERSON ROBERTSON, who has offered a cup, valued at £500, for the winner of the England-Australia Air Race, and who has also given five cash prizes totalling £15,000, is a man whose life is of considerable interest, and below our contributor sketches briefly the manner of man whose generosity is an inducement to pilots to race over a course originally made famous by the late Sqd. Ldr. Bert Hinkler.

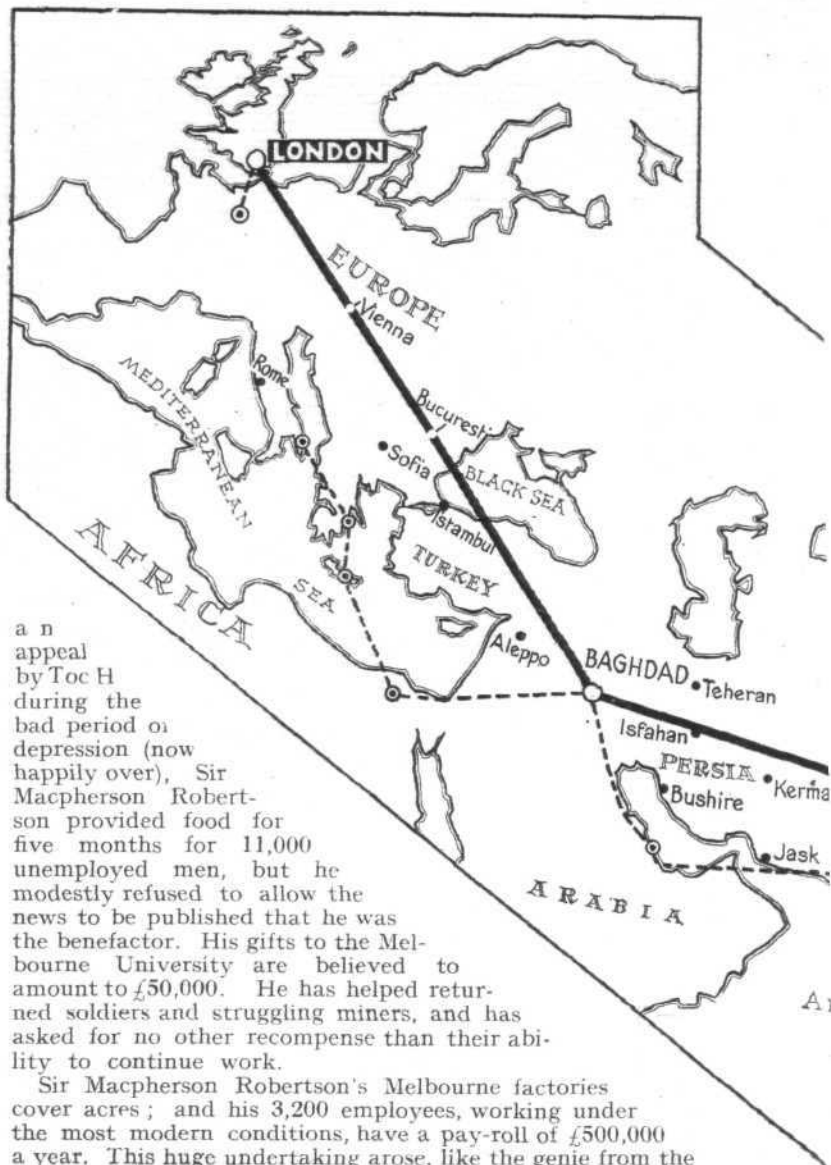
"What are you crying for, Sonny?"
"MacRobertson's Cough Drops!"

That dialogue will recall to Australians all over the Empire the days of their childhood. It was the legend accompanying a picture of an elderly philanthropist about to buy sweets for a greedy little boy; and the advertisement was to be seen in every town in Victoria about forty years ago. It was one of the early efforts of Sir Macpherson Robertson, the Melbourne millionaire chocolate manufacturer, whose offer of £15,000 in prizes for the air race from England to Australia in connection with the centenary of the State of Victoria has rendered possible the participation of many well-known pilots.

The race is divided into two parts—a speed contest for a first prize of £10,000 and a gold cup valued at £500, a second prize of £1,500, and a third of £500; and a handicap race for prizes of £2,000 and £1,000. Any individual, organisation, or nation may enter for both sections of the race; and there is no restriction as to the type or power of the aeroplanes engaged. Landings must be made for checking purposes at Baghdad, Allahabad, Singapore, Darwin (Northern Territory of Australia), and Charleville, Queensland. The terminal point will be Melbourne. Victoria will welcome all comers, but fervently hopes that the victor will be the famous Australian airman, Sir Charles Kingsford-Smith. The race will be controlled by the Royal Aero Club.

This historic enterprise owes something to Scotland. Its originator, Macpherson Robertson, or "MacRobertson," as everyone still calls him, was born of Scottish parents in the gold-mining town of Ballarat, Victoria, in 1860, and cultivated his business acumen at an early age in Edinburgh itself. He was knighted in 1932, after having financed an exploratory circuit of Australia by motor-car, and an Antarctic expedition which gained for its sponsor the Fellowship of the Royal Geographical Society.

In seven years Sir Macpherson Robertson has given more than £360,000 to the causes of exploration, education, and charity. This sum includes a gift of £100,000 for celebrations in connection with the Centenary, but takes account neither of the presents which the Scots-Australian millionaire is always distributing by way of what he calls "pocket-money expenses," nor of the liberal gifts in kind which he makes to the poor of Melbourne every Sunday morning. The amount of £100,000 above mentioned will provide £40,000 for a girls' high school; £21,000 for a bridge over the Yarra, on which river Melbourne stands; and £15,000 for a Temple of Youth. Also, in response to



a n appeal by Toc H during the bad period of depression (now happily over), Sir Macpherson Robertson provided food for five months for 11,000 unemployed men, but he modestly refused to allow the news to be published that he was the benefactor. His gifts to the Melbourne University are believed to amount to £50,000. He has helped returned soldiers and struggling miners, and has asked for no other recompense than their ability to continue work.

Sir Macpherson Robertson's Melbourne factories cover acres; and his 3,200 employees, working under the most modern conditions, have a pay-roll of £500,000 a year. This huge undertaking arose, like the genie from the bottle, out of an old nail-can in which he made his first sweets in the bathroom of a cottage in the suburb of Fitzroy.

When Macpherson Robertson was eight years of age, his parents returned to their native land, and the lad secured a job at Leith which entailed walking to Edinburgh before dawn to distribute newspapers. From seven until eight o'clock he was a barber's assistant. From nine to four, in conformity with his parents' decision that work must not interfere with his education, he went to school; and from 6 to 10 he was back in the barber's shop.

Returning to Australia, he served by turns as a hatter's counter-assistant, baked biscuits for a confectioner, cut corks, helped a blacksmith, ran errands, shovelled coal, and minded cows until he secured a post with a manufacturer of sweets, for whom he worked thirteen hours a day for half-a-crown a week. Then, little more than a youth, he launched out on his own account in the bathroom with some moulds for sweets, two bags of Queensland sugar, a nail-can, an iron skillet, and a capital of half-a-crown. With this stock-in-trade, a knowledge of the rudiments of confectionery making which he lost no opportunity of extending, and a flair for advertising, he founded his



Sir Macpherson Robertson, with the trophy he is giving for the winner of the England-Australia Air Race.

fortune. He grew up to be a singularly handsome man, his prematurely grey hair adding to his striking appearance. He married a woman of his own surname; and, though he has two sons and a daughter, his paternal instincts have been afforded wider outlet in the care he exercises of the welfare of his employees in the confectionery works and the subsidiary industries, from printing to box-making, which his enterprise has brought to birth and given a flourishing existence.

Sir Macpherson Robertson is not attracted to politics, and has never sought to enter public life; but his name and works are known all over Australia and beyond it. He is the Carnegie of the confectionery trade of the Southern Hemisphere, and he still persists in donning his white overalls and maintaining touch with every detail of a business for which he refused an English firm's offer of £3,250,000.

CONCERNING THE ROUTE

All over the world, if we are to judge from newspaper reports, the England to Australia Air Race is creating interest. So far, however, very few pilots have made official entries, and it is certainly not a race in which anyone could enter without more thought and more planning than has been necessary in any other race.

There has, perhaps, been a tendency to look upon it as a race over the now well-worn route between England and the Australian Continent. In point of

flying a Great Circle course is not, however, always the easiest manner of getting from one to another of two places, as, unless the two places both lie on the Equator or are of the same longitude (omitting for the moment questions of magnetic variation), it is necessary to change course constantly because a Great Circle does not cut each meridian of longitude at exactly the same angle. This, especially when racing, raises many problems. Obviously no one wants to fly over a longer course than is absolutely necessary, but a compromise is usually made to avoid that constant change of course, because every change necessitates, in theory at any rate, a different allowance for the wind, besides which it makes things far easier for the pilot if some form of constant bearing course is flown. Probably most pilots will compromise still further by deviating slightly from the Great Circle course so as to pass over prominent landmarks where possible in order that they may thus make it easier to keep on their right course and know their position at all times.

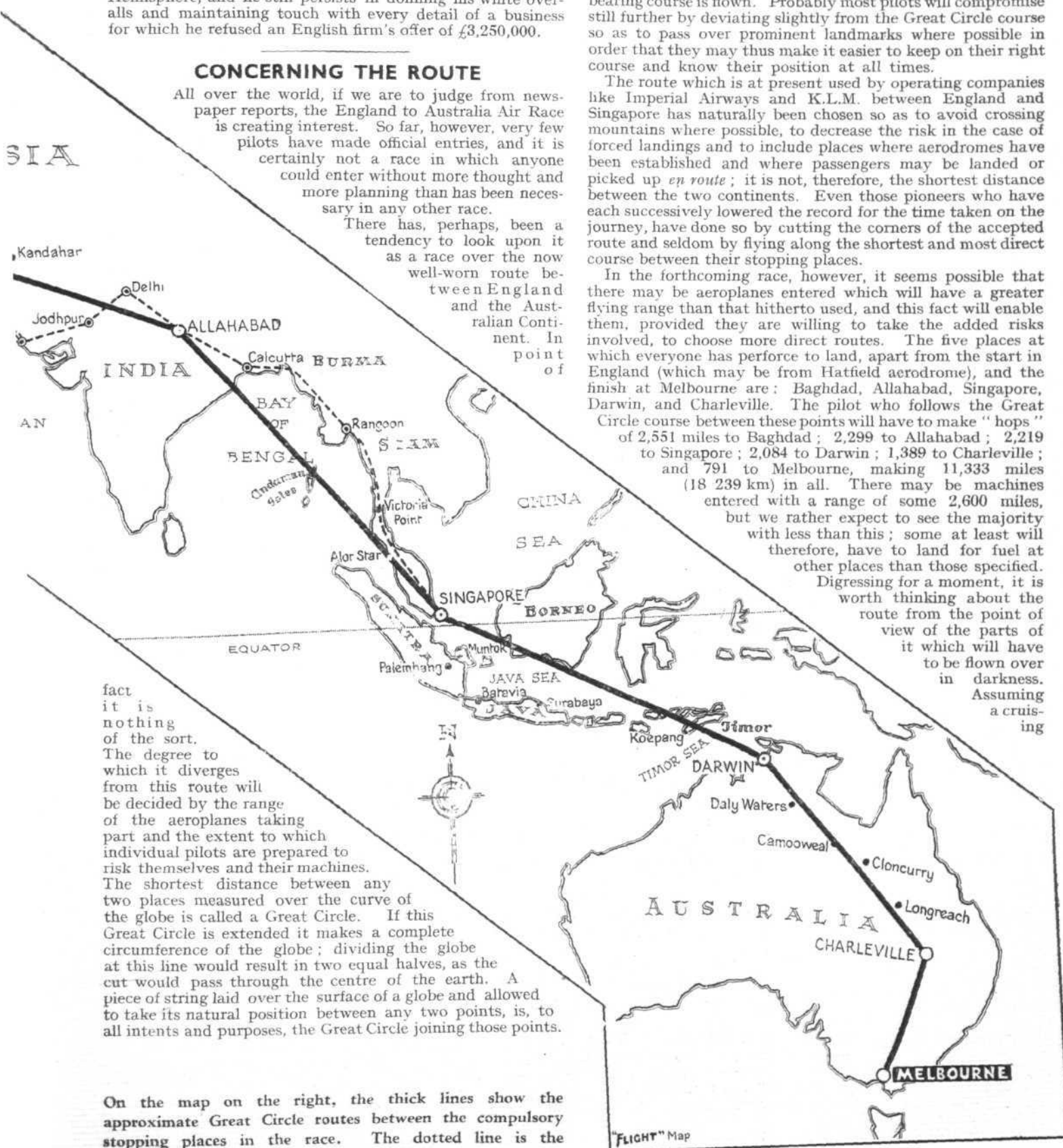
The route which is at present used by operating companies like Imperial Airways and K.L.M. between England and Singapore has naturally been chosen so as to avoid crossing mountains where possible, to decrease the risk in the case of forced landings and to include places where aerodromes have been established and where passengers may be landed or picked up *en route*; it is not, therefore, the shortest distance between the two continents. Even those pioneers who have each successively lowered the record for the time taken on the journey, have done so by cutting the corners of the accepted route and seldom by flying along the shortest and most direct course between their stopping places.

In the forthcoming race, however, it seems possible that there may be aeroplanes entered which will have a greater flying range than that hitherto used, and this fact will enable them, provided they are willing to take the added risks involved, to choose more direct routes. The five places at which everyone has perforce to land, apart from the start in England (which may be from Hatfield aerodrome), and the finish at Melbourne are: Baghdad, Allahabad, Singapore, Darwin, and Charleville. The pilot who follows the Great Circle course between these points will have to make "hops" of 2,551 miles to Baghdad; 2,299 to Allahabad; 2,219 to Singapore; 2,084 to Darwin; 1,389 to Charleville; and 791 to Melbourne, making 11,333 miles (18,239 km) in all. There may be machines entered with a range of some 2,600 miles, but we rather expect to see the majority with less than this; some at least will therefore, have to land for fuel at other places than those specified.

Digressing for a moment, it is worth thinking about the route from the point of view of the parts of it which will have to be flown over in darkness. Assuming a cruising

fact it is nothing of the sort. The degree to which it diverges from this route will be decided by the range of the aeroplanes taking part and the extent to which individual pilots are prepared to risk themselves and their machines. The shortest distance between any two places measured over the curve of the globe is called a Great Circle. If this Great Circle is extended it makes a complete circumference of the globe; dividing the globe at this line would result in two equal halves, as the cut would pass through the centre of the earth. A piece of string laid over the surface of a globe and allowed to take its natural position between any two points, is, to all intents and purposes, the Great Circle joining those points.

On the map on the right, the thick lines show the approximate Great Circle routes between the compulsory stopping places in the race. The dotted line is the ordinary route to Australia.



speed—or should one say racing speed?—of 200 m.p.h., a figure below which it hardly seems likely that anyone will seriously consider going for the race, apart from the handicap, then Baghdad should be reached just about the end of the first day, so most of the stretch to Allahabad will be the first night's work. The direct route to Baghdad itself is not pleasant, but this latter will be nerve-racking indeed.

Between England and Baghdad much varied country will be encountered across Europe, and the weather is likely to be rather unfavourable. The course will lie south of Cologne, Vienna and Budapest, across Hungary and the Transylvanian Alps, which rise in places to over 10,000 ft. (3 048 m) to the shores of the Black Sea, where a 200-odd miles crossing has to be made. Next come Anatolia and Kurdistan, with mountains and forbidding country rising in places to over 6,000 ft. (1 829 m) leading to the lower plains of Samarra, and the river Tigris and Baghdad. The Tigris should, even in the failing light, form a helpful guide to the end of this stretch. This is the longest "hop" of any. Alternative routes, to allow of refuelling before reaching Baghdad, might either be to Rome or Brindisi, or to Constantinople, or Aleppo, but just what attitude the authorities in the various countries to be passed over will take remains to be seen. Both Istanbul and Aleppo lie comparatively close to the direct route, and so would seem likely places to be chosen.

The next step, on through the night, is not at all, as pilots say, "funny." It means flying straight over Persia, between Afghanistan and Baluchistan, over Rajputana to Allahabad. On this stretch the accepted route is widely divergent, as it lies far to the south via Bushire, Jask and Gwadar to Karachi, but the possible alternatives as stopping places for fuel on the direct route are almost non-existent, unless the Persians can be persuaded to allow facilities to be arranged at Kerman or Isfahan. A landing at Jask or Gwadar would entail an extra distance of some 150 miles, hardly to be considered in a race except as a last resort.

From Allahabad to Singapore the direct distance is 2,219 miles (3 571 km), and to achieve the journey without covering a great distance the pilot would have to fly some 1,150 miles (1 851 km) straight out over the Bay of Bengal, after crossing the Ghats, which in places rise to 6,000 ft. (1 829 m). On this course he would hit the Malay Peninsula somewhere about Penang or Alor Star, where fuel supplies could be obtained without taking him much off his direct line. Should he not have sufficient range to make thus far, he would have had to take a more easterly course and land at Rangoon, Bangkok or, and this would have taken him least out of his direct course, Victoria Point, which lies some 600 miles up the coast from Singapore and is actually the most southerly point of Burma. The probable extra distance entailed would only be something like 50 miles, but it must not be forgotten that pilots who land at places other than those specified as official and compulsory stops will not only be penalised by having to fly farther, but also the time spent on the ground at those places has to count as flying time. The weather on this stretch of the race is notorious as being pretty bad from a flying point of view, but if the seasons behave themselves and are regular, the

race should be taking place between the cessation of the South West Monsoon and the beginning of the North West Monsoon, which occurs in the Port Darwin region about the beginning of November, so theoretically the race should really be over before the latter monsoon breaks.

The next stage to Darwin is 2,084 miles (3 354 km), and except for the southern end of Borneo and sundry small islands is all the time over water. Those who cannot make the trip direct may elect to refuel at Koepang, which lies at the southern end of Timor Island, about 100 miles off the direct line and some 600 miles (966 km) from Darwin. Landing there would not mean increasing the total distance to be flown by very much. Away to the south of the route, along the Javan range of islands, there are several aerodromes used by the K.N.I.L.M. air liners. These aerodromes will presumably be used by our own Australian air mail when this starts. Among those which may be considered by pilots in this race are Batavia and Sourabaya, but the use of either of these would mean having to fly an extra distance of about 150 miles.

Those pilots flying at about 200 m.p.h. may easily find that their schedule has brought them to Darwin as night is falling, and they will be faced with the 1,389 miles' (2 235 km) flight to Charleville in the dark. Australians tell us that that will be no joke. It is featureless and most difficult country in the day time, and woe betide the pilot who loses the route, which is only marked by tracks or telegraph poles. At night it will be difficult to judge the drift due to the wind, and the only safe thing to do on this stretch seems, so we are told, to arrive some little way to the north of Charleville and follow the railway. Even Charleville itself is said to be difficult to find from a few miles away. By the time this stop is reached pilots should have realised how large Australia really is and, we hope, how much in need of aviation development. The final leg to Melbourne is a comparatively short one of 791 miles (1 273 km), though featureless in some parts does not, we understand, present any particular difficulty.

Throughout this article we have not mentioned radio. The help which pilots will get from radio services depends to a large extent upon themselves and the type of aircraft they are flying. Over a great deal of the route there are excellent direction-finding services, but the majority are worked on telegraph which, of course, entails carrying a qualified telegraph operator. Where the aeroplane is a large one this does not present a very serious problem, but where, for instance, only two pilots are carried, it follows that either one of them must learn to do that job efficiently or else the value of the radio will be lost to them. It seems probable, therefore, that the smaller machines may elect to increase their range by dispensing with the weight of the radio apparatus.

Many other problems arise in connection with the race, and we do not pretend to have dealt with the subject exhaustively in this short article, but only to have pointed out some of the difficulties which arise and the basic difference between flying over a carefully mapped out commercial air route between two places and racing between the same two places over the shortest route. Other articles dealing with the rules, etc., were published in *FLIGHT* for August 3 and November 2, 1933.



Reorganisation of U.S. air services

THE unification of all Government air services is, apparently, being seriously considered by President Roosevelt. Rumour has it that Gen. Mitchell, former Chief of the U.S. Air Corps, is being considered as chief of a Board which would bring together the War Department, Commerce Department, National Guard, Coast Guard, part of the Marine Flying Corps and the N.A.C.A. This new measure will not affect naval and marine aircraft in service on naval vessels.

Thickness of steel covering

It is always a matter of great difficulty to write a summary of a technical article or paper, and in summarising Mr. Pollard's paper in our issue of March 22, a sentence appeared which may have given readers a wrong impression of what Mr. Pollard meant. The sentence in question read: "He fixed the minimum practicable thickness of the covering material at 0.02 in., a condition which he considered ruled out the use of steel and made that of light alloy imperative." Actually, of course, 0.02 in. is not the smallest practicable thickness of steel, and in the

full text of Mr. Pollard's paper the following sentence occurred: "... and as we shall soon see that steel cannot compare with light alloys as the material for coverings, we will straight away fix the minimum practicable thickness of the latter at 0.02 in." On the Bristol "Bulldogs" steel is used as thin as 0.006 in., although not externally. We hope that shortly we will have some notes from Mr. Pollard dealing with such aspects of metal covering as he had to leave out in his recent lecture.

Air survey in Western Australia

LAST week we gave some of the first details of the operations now being undertaken in connection with gold mining in Western Australia. It will be remembered that in *FLIGHT* for October 5, 1933, we reported the christening of the two "Dragons" referred to, at Stag Lane. This enterprising work is being carried out by H. Hemming & Partners Ltd., who are managing contractors for the Western Mining Corporation. Wing Commr. F. C. Laws is the field operations manager and he has under him a staff of experts belonging to the London company, whose office is 22, Queen Anne's Gate, S.W.1.



THE SHORT "SCYLLA"

4 Bristol "Jupiter" XF BM Engines

SINCE the earliest days of flying the name of Short Brothers has been chiefly associated with marine aircraft, and of recent years such flying boats as the "Calcutta," the "Scipio," the "Rangoon," the "Singapore" and the R6/28 have made the name Short a household word where marine aircraft are discussed. When it was announced, about a year ago, that Imperial Airways had placed an order with Short Brothers for two landplanes, there was some little surprise that this old seaplane firm should thus suddenly enter the landplane market. The surprise was caused not by any doubt that Short Brothers could produce an excellent landplane—no one ever doubted that—but by the change of type. Actually, if the subject is examined a little more closely, the change is not nearly as great as might at first be supposed. Imperial Airways, Ltd., have for several years been operating flying boats of the Short "Scipio" class over the Mediterranean section of the England-Egypt air route, and these boats have given quite remarkably good service. From the very beginning they promised well in

that not a single modification of any importance was necessary when the first "Kent" (as the class was then called) was launched, and subsequent experience has done nothing to mar that early promise. We doubt if ever before any aircraft has been put on a service and given so much satisfaction and so little trouble as have the three Short boats of the "Kent" class.

When Imperial Airways came to place an order for large landplanes, it was not unnatural that they should turn to Short Brothers, among others. And when Short Brothers said that they could produce landplane fuselages to fit the superstructure of the "Kents," there was very good reason for adopting this scheme. From the point of view of the operating company, the fact that wings and engine installations, etc., were interchangeable was a great asset in that the number of spares was considerably reduced. From the maker's (and operator's) point of view, the use of an identical superstructure meant that jigs and tools were already in existence, so that manufacturing costs were correspondingly reduced. The logical outcome



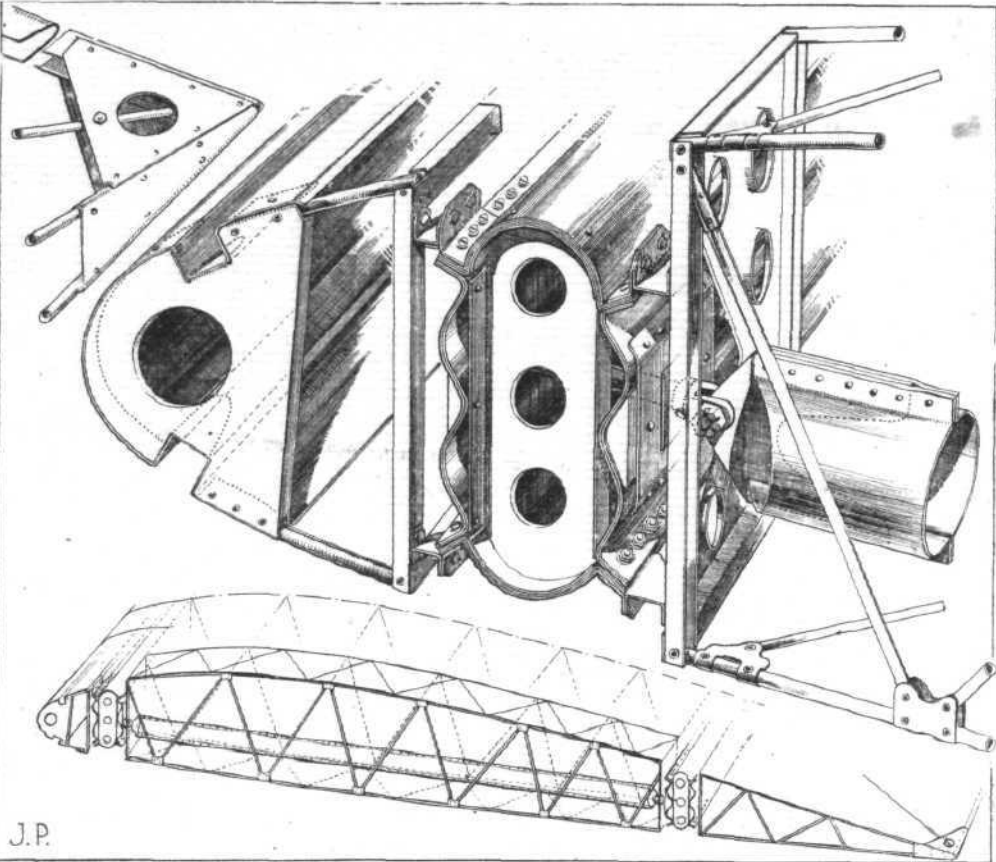
30,000 LB. IN THE AIR: The Short "Scylla" (four Bristol "Jupiter") making a test flight with nearly full load, piloted by Mr. Lankester Parker. This and the other aerial views of the machine were secured from a "Fox Moth" belonging to Gravesend Aviation, Ltd., and piloted by Mr. P. H. Smith. (FLIGHT Photo.)

WING DETAILS: Duralumin spars and ribs, with steel fittings, are used in the Short "Scylla." (FLIGHT Sketch.)

of these considerations was the "Scylla," as the first of the new machines is called.

Misfortunes of various sorts have delayed the completion of the "Scylla" until now. When work was begun it was realised that the Short factory at Rochester would not afford space for the final erection of the superstructure on the fuselage, and it was decided to erect the machine finally at the Rochester aerodrome. No hangar was in existence at the time, and estimates indicated that the first machine should be ready for erection before the hangar on the new aerodrome could be finished. As it would obviously be impracticable to build the hangar and erect the machine at the same time, it was decided to erect the machine in the open, and only the concrete floor of the hangar was laid down beforehand. Then, as not infrequently happens, delays occurred in completing the aeroplane, and when the large components, fuselage and wings, were transported to the aerodrome the weather was so bad, with rain and gales, that the work was seriously interfered with, and often had to be stopped altogether. We think a word of praise is due to those Short workers who did the erecting under such difficulties. A cold and miserable job they had, but Mr. Bibby, the works manager, has the heaven-sent gift of inspiring loyalty and willingness, and the work went forward in spite of all obstacles. We have referred to the difficulties encountered because, unless they are known, the delay in delivery might be ascribed to technical "snags," which would be unfair to Mr. Gouge and his assistants.

Early last week the "Scylla" was finished, and Mr. Lankester Parker was able to make a first test flight, with the machine "light." All was found in order except such minor matters as nearly always require adjustment, and whenever the weather has permitted, Parker has been flying the machine, with gradually increasing loads. When we visited Rochester aerodrome last week, Parker took the "Scylla" up at a gross weight of 30,000 lb., and by the time this article appears a flight will doubtless have been made at the full gross weight of 33,500 lb.



Structural Details

Although it has a superstructure identical with that of the "Scipio" class flying boats, the conditions to be met in a fuselage of a landplane differ so much from those for

THE SHORT "SCYLLA"
Four Bristol "Jupiter" XF BM Engines

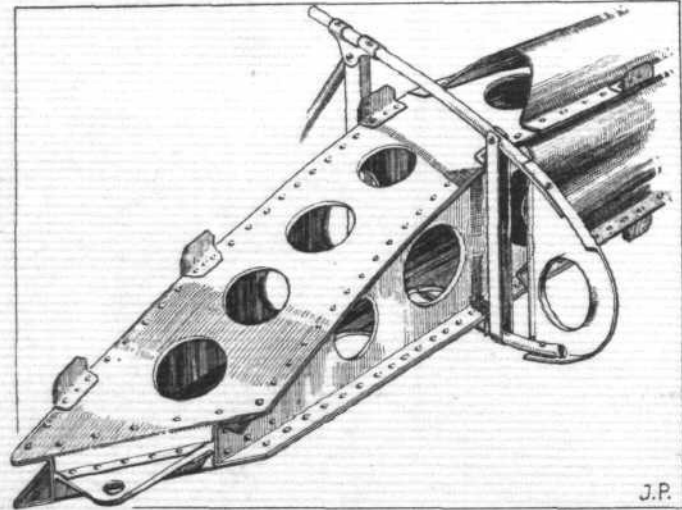
Dimensions		ft. in.	m ² .
Length o.a.	.. .. .	83 10	(25,57)
Height, tail down	.. .. .	29 6	(8,99)
Wing span (upper)	.. .. .	113 0	(34,44)
" (lower)	.. .. .	92 6	(28,19)
Wing chord	.. .. .	13 9	(4,19)
Length of fuselage	.. .. .	77 4	(23,57)
Maximum width of fuselage	.. .. .	11 6	(3,50)
For'd cabin, length	.. .. .	6 7	(2,00)
" mean width	.. .. .	10 4	(3,15)
" mean height	.. .. .	7 0	(2,13)
Aft cabin, length	.. .. .	21 10	(6,67)
" mean width	.. .. .	10 9	(3,28)
" mean height	.. .. .	7 4	(2,23)
For'd luggage compartment, length	.. .. .	2 4	(0,71)
" " width	.. .. .	3 5	(1,03)
" " height	.. .. .	7 4	(2,23)

Areas		sq. ft.	m ² .
Main planes	.. .. .	2,615	(242,94)
Ailerons	.. .. .	173	(16,07)
Tail plane	.. .. .	206	(19,14)
Elevators	.. .. .	128	(11,89)
Fin	.. .. .	79	(7,34)
Rudder	.. .. .	73	(6,78)

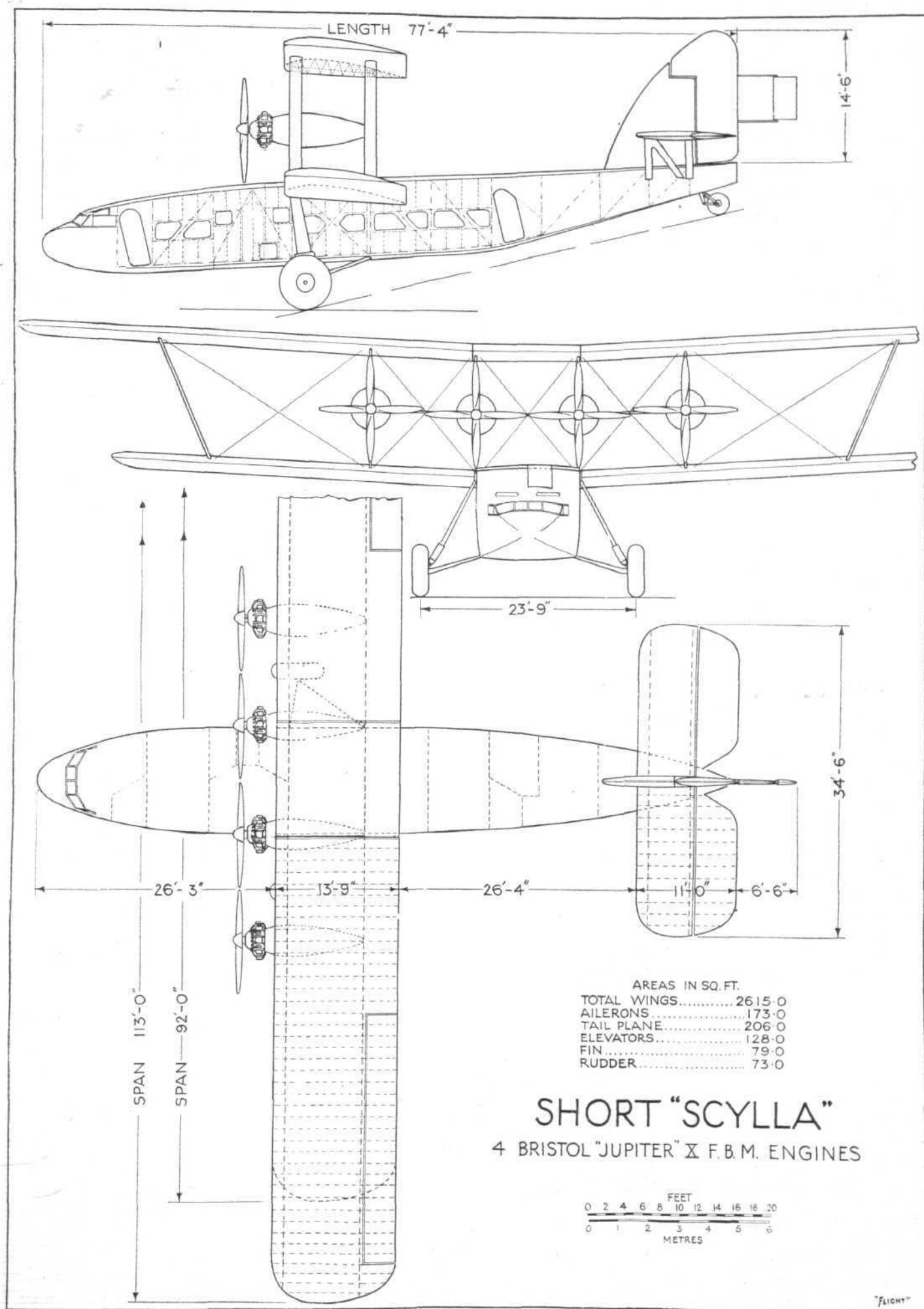
Weights		lb.	kg.
Tare weight, equipped	.. .. .	22,650	(10 274)
Disposable load	.. .. .	10,850	(4 921)
Maximum gross weight	.. .. .	33,500	(15 195)

Performance

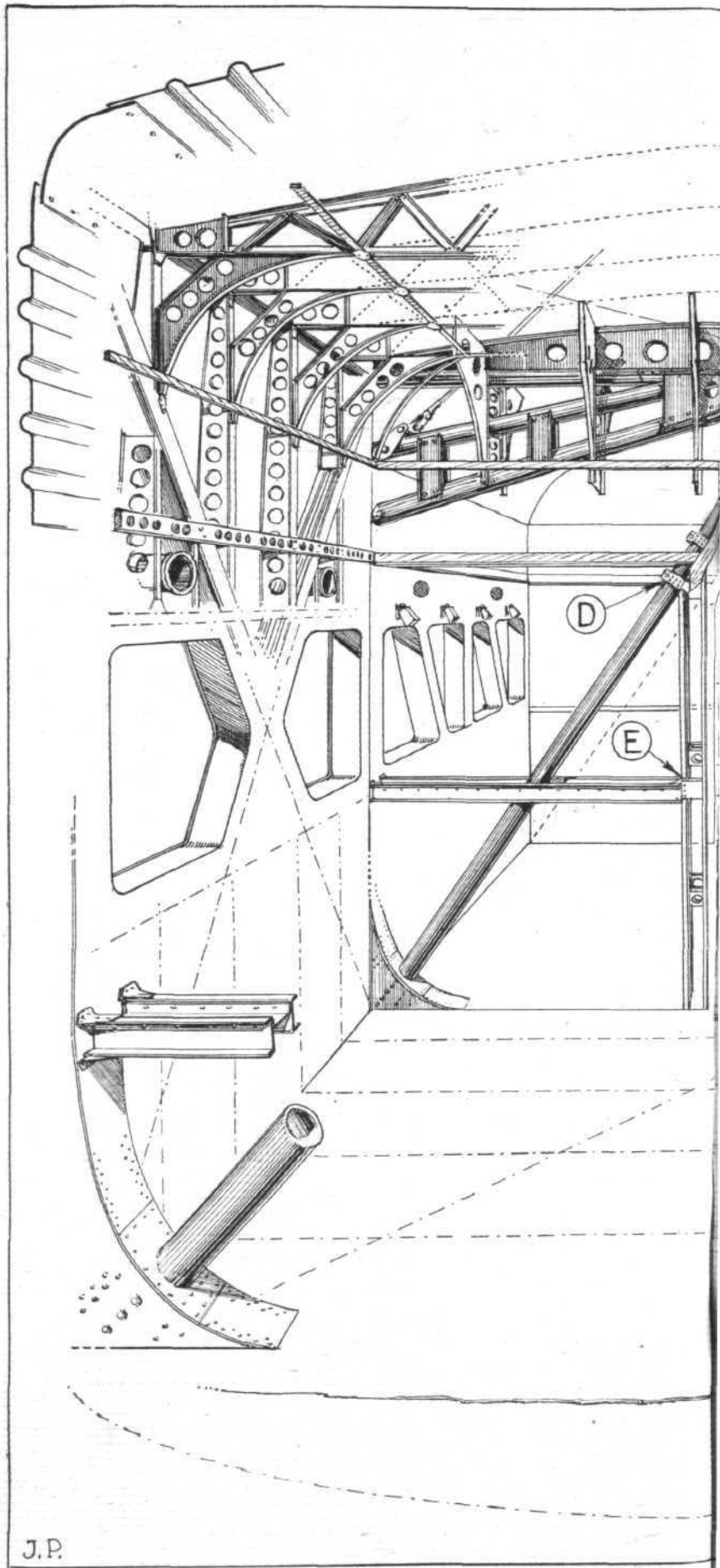
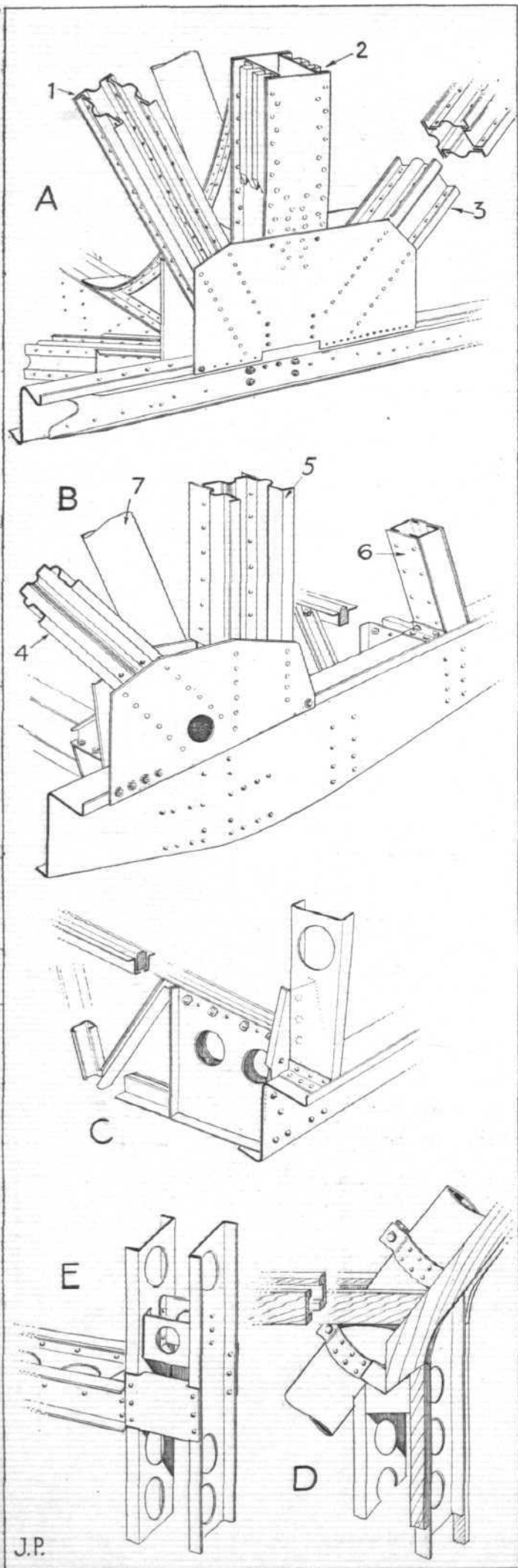
As the "Scylla" had not, at the time of going to press, been to Martlesham for official tests, no performance figures can be given. The performance is, however, almost identical with that of the "Scipio" class flying boat.



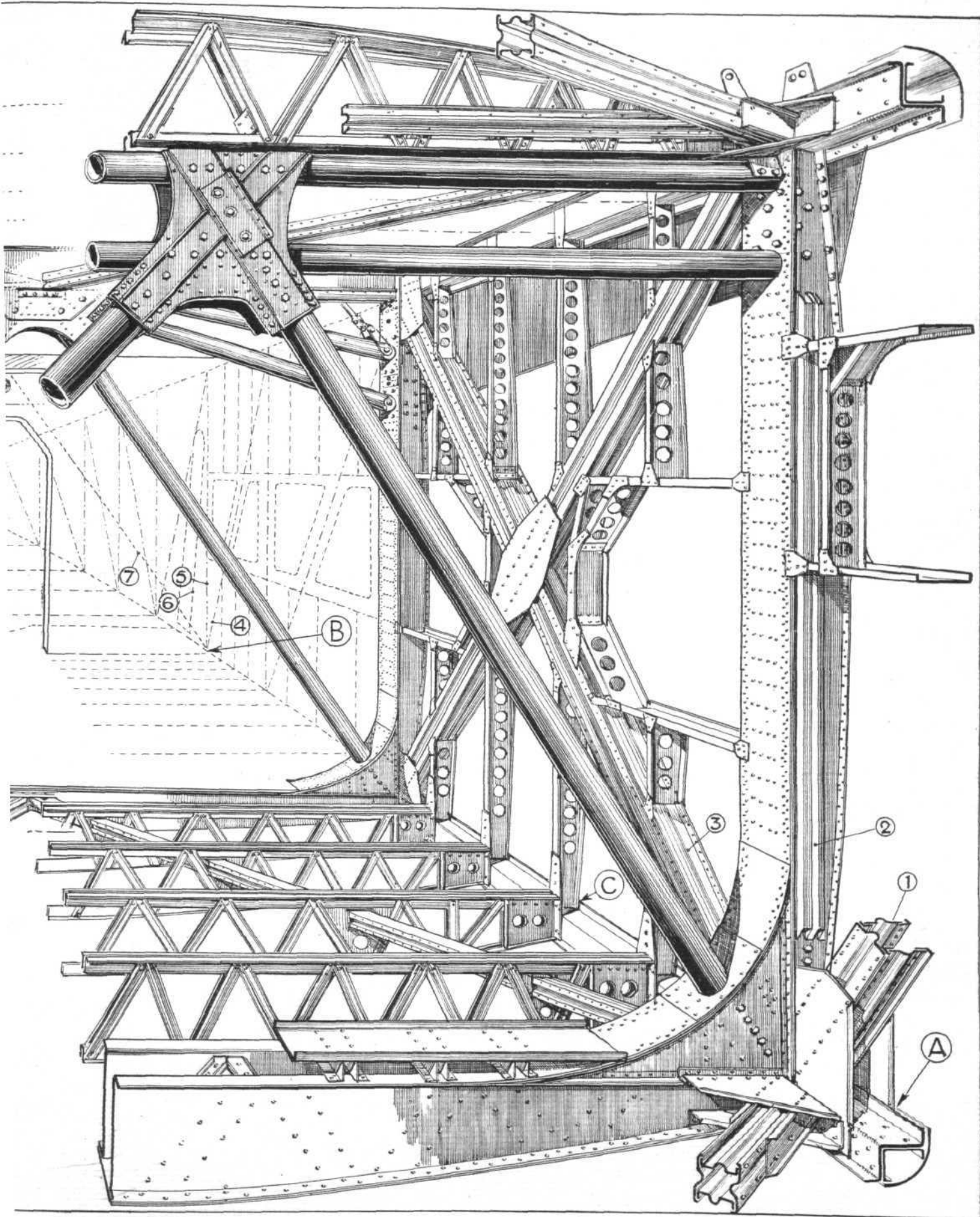
THE TIP OF A MAIN SPAR: Instead of the corrugated section the tip becomes a plain box section. (FLIGHT Sketch.)



THE SHORT "SCYLLA" : General arrangement drawings, to scale.



FUSELAGE DETAILS : Duralumin is the material used in the "Scylla," except for certain highly-stressed fittings. The large view shows the arrangement of main components, while the sketches on the left illustrate details of various joints, etc. (FLIGHT Sketches.)

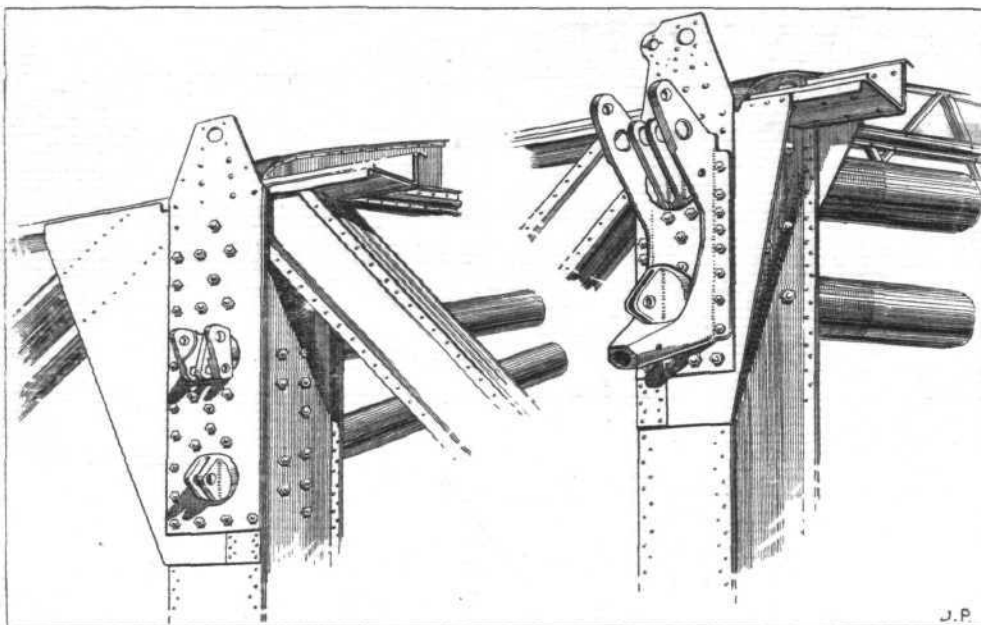


which a flying boat hull are designed that in the "Scylla" the structural methods employed bear little resemblance to those of the Short boat hulls. Most of the essential details can be seen in the remarkable set of sketches which "J. P.," our Chief Artist, collected at the Rochester works of Short Brothers while the "Scylla" was being built. The structure, it will be seen, is entirely metallic, including the secondary structure and the outer skin. The only exception is formed by some of the cabin fur-

nishings, which are of wood veneers, as selected by Imperial Airways.

The primary fuselage structure includes the four longerons, a number of formers, and panel bracing arranged variously in the form of letters "N" and "X." The "N" formation is used in the majority of the bays in the fuselage sides, the "X" form being confined to the bay between the wing spar bulkheads, where the stresses are greater.

WING ATTACHMENTS: These two sketches show the details of the fittings by means of which rear and front lower spars are secured to the top of the fuselage. The front spar fitting also takes the undercarriage leg. (FLIGHT Sketches.)



A secondary structure, consisting of light stringers, is attached to the members of the primary structure by riveting, gusset plates, etc. And finally the outer skin, which has spaced longitudinal corrugations, is riveted to the flanges of primary and secondary structure members. The sketches on pp. 330 and 331 make the system quite clear. The sketches on the left show details of the various joints, the location of which is denoted by reference letters and figures in the larger sketch.

Channel sections of sheet duralumin are used extensively. The longerons are built up to form box sections with sharp inner and rounded outer corners. The inner longeron strip is of angle section, with the free edges turned outwards. Into the angle of this strip is riveted a stiffener, also of angle section, but with its edges turned inwards, as shown in the sketch at A on pp. 330-331. The outer covering strip is of half-round section, and it will be noted that in this, as in all other members in the fuselage, all flanges are arranged to be readily accessible for riveting.

Sides as well as roof and floor of the "Scylla" are slightly curved, the main formers having straight inner and curved outer edges. They are of rectangular box section, with two sides flat and two corrugated. In roof and floor the transverse members are Warren girders, the floor members particularly being closely spaced and fairly stout, to carry the weight of more than 40 people.

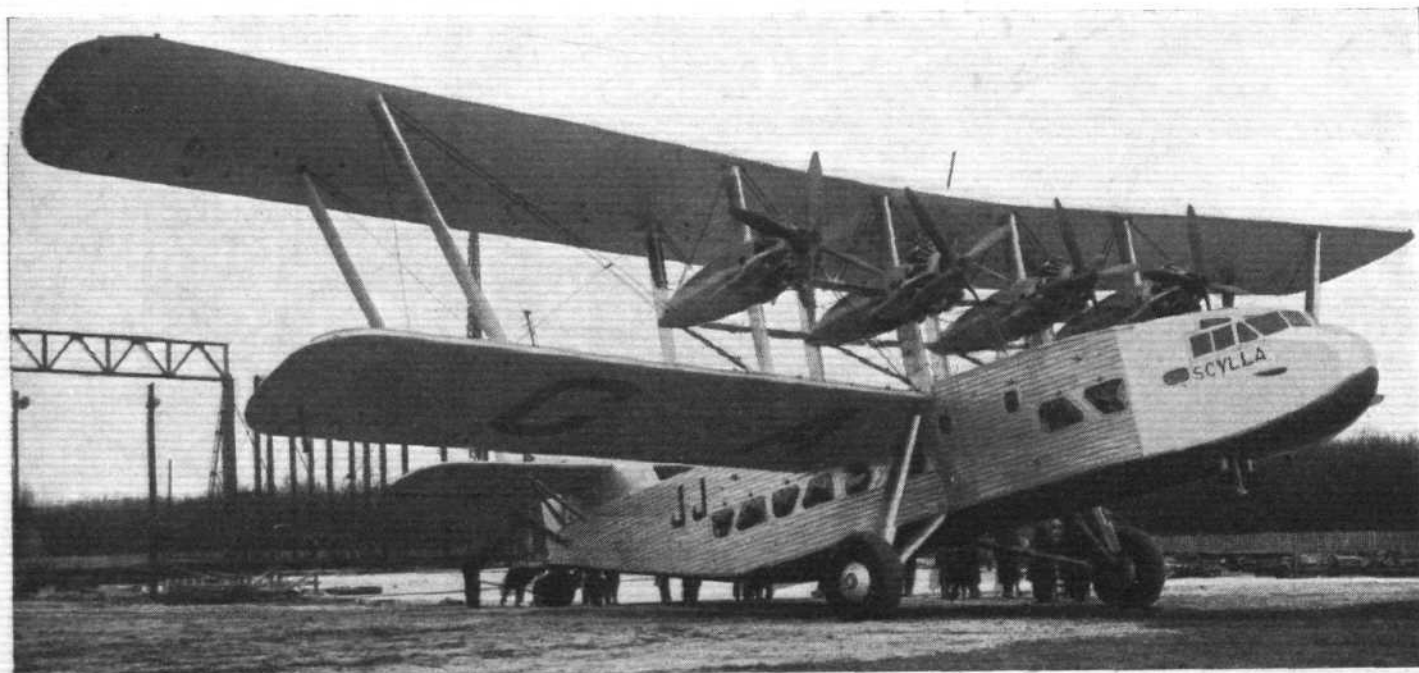
As already mentioned, the specially strong formers which carry the wing attachments are of box section. The loads from the lower wing spars are carried across the fuselage by tubular members, those of the rear spar sloping down slightly to give the lower position required by the angle of incidence. The wing fittings on the fuselage are shown in the sketches above, that for the rear spar being on the left.

In view of the fact that the superstructure of the

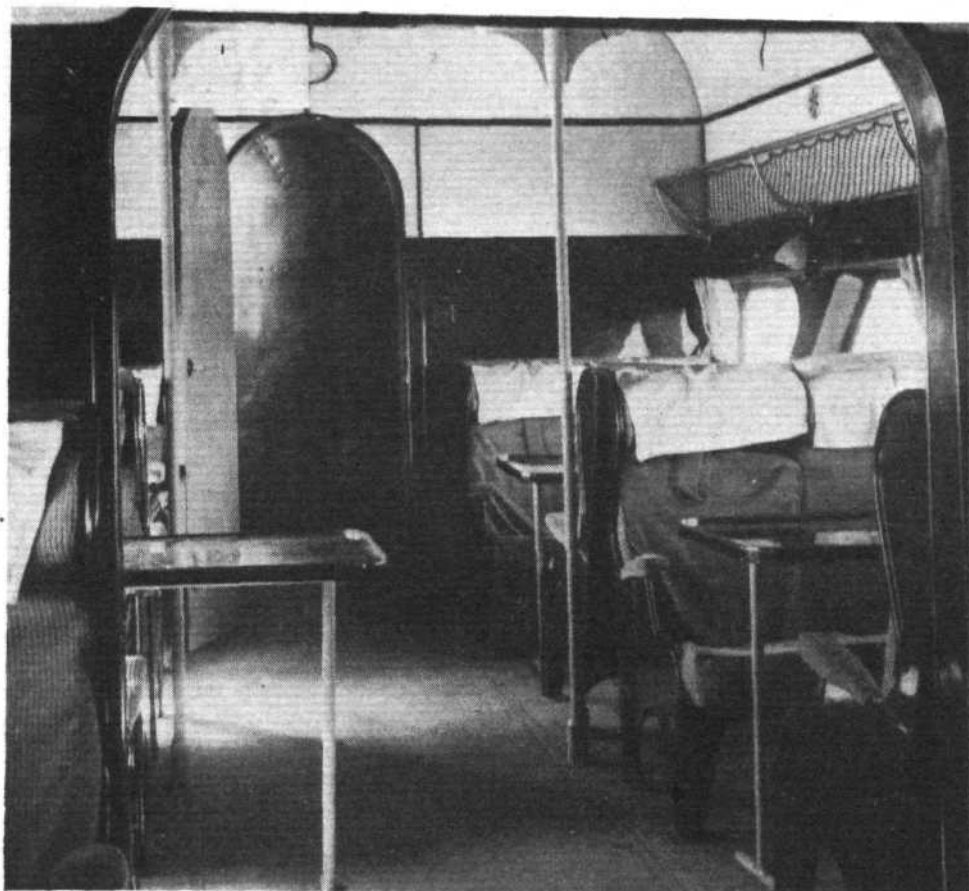
"Scylla" is identical with that of the "Scipio," little need be said about the wing structure. The spars are of duralumin, and are of box section with corrugated sides, top and bottom. The wing ribs are also of duralumin, and the material is used mainly in tubular form, as indicated in the wing sketches on p. 328.

Four Bristol "Jupiter" engines, type XF. BM., are mounted abreast in the gap between the wings, and drive wooden four-bladed airscrews. The tips of the inner airscrews clear the top corners of the fuselage by a few inches only. Should it at any time be desired to fit other engines, provision has been made for this to be done. The fuel is carried in three tanks in the top plane, the total capacity being 625 gall. (2 841 litres), or sufficient for approximately 6 hours. The petrol system is so arranged that all the engines can be fed from any tank through a common collector box. Each tank can be cut off from the system by means of a control in the fuselage. The oil tanks are located behind the engines, one in each nacelle. Starting is by means of a Bristol type gas starter housed in a small compartment on the port side, in the buffet.

The undercarriage is of the divided type, each half consisting of a tripod composed of the telescopic leg and two struts forming a vee. Owing to the angles on the various struts, the loads in the telescopic legs are large, somewhere in the region of the total weight of the machine



TOWERING: With tail on the ground, the height of the "Scylla" is just under 30 ft. The engines are Bristol "Jupiters," series XF BM. (FLIGHT Photo.)



COMFORT : A view in the rear cabin of the "Scylla." The mean width of the cabin is just under 11 ft. (FLIGHT Photo.)

Behind the pilots' seats is the wireless installation, which includes a Marconi type A.D.41A/42A set and direction-finding gear. The aerial is led out through the floor of the fuselage.

Immediately aft of the pilots' compartment is the forward cabin, which has seating accommodation for ten passengers. As in the after cabin, the seats are arranged facing each other, six on one side and four on the other. There are large tables between the seats, and a clear gangway down the middle. The decorations are pleasing, and there is an air of speciousness rarely found on an aeroplane. Plenty of room everywhere is the feeling one has on entering the cabin, and this applies to head room, leg room and elbow room. The forward cabin has been specially set aside for those passengers who wish to smoke.

The space forward of the wing spar bulkhead frames has been set aside for lavatories, luggage compartment and buffet. As

already mentioned, the luggage compartment on the starboard side is used for trimming purposes. On the port side is the buffet, which is provided with every facility for serving meals, the equipment, including an ice chest, fruit racks, wine case, sink, cupboards, etc. If deemed necessary, two stewards will have room enough for their simultaneous duties in attending to the requirements of passengers.

The after cabin is arranged in a manner similar to that adopted for the forward cabin, but is larger and seats 29 passengers. The windows are large, and in dull weather extra lighting is provided by dome lights in the roof. Pendant lamps are provided over each table. Above the windows are racks for light parcels.

For heating the cabins muffs are fitted around the exhaust tail pipes, the hot air being led to light aluminium ducts situated at floor level, at the sides of the fuselage. The amount of hot air entering can be regulated by means of circular diaphragm shutters. Fresh air ducts are fitted above the tables, and air is exhausted from the cabins by venturi type exhausters.

Experience is not yet available concerning the absence of noise in the cabins of the "Scylla," but as the "Scipio" class flying boats are remarkable for their quietness, there is reason to expect the cabins of the "Scylla" to be well above the average standard in this respect also.

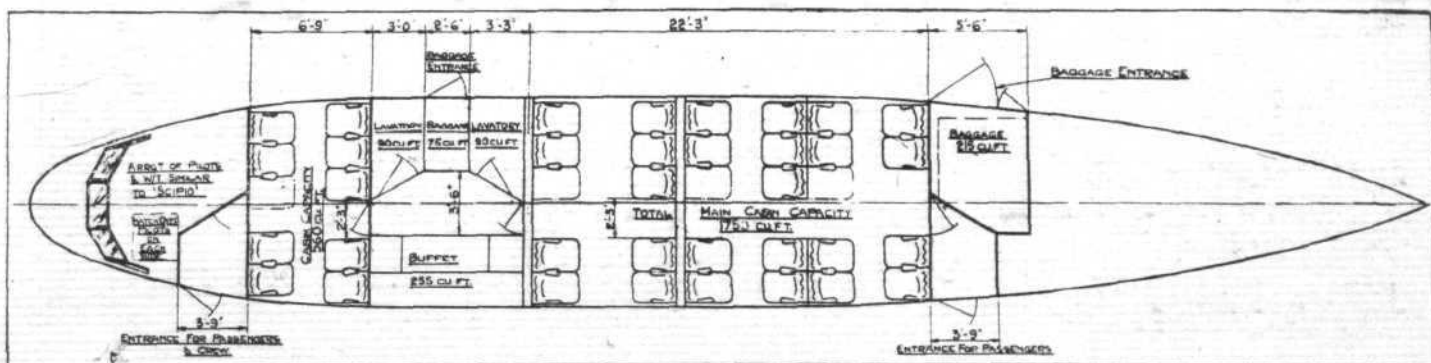
Access to the cabins is by two doors, both on the port side. The main entrance is at the back, behind the after cabin, and as the rear portion of the fuselage is low over the ground when the tail is down, it is possible to step

on each leg. These large loads have necessitated some very substantial forgings in the undercarriage, but without altering the wing structure it is difficult to see how they could be reduced. Dunlop 22 in. x 26 in. wheels are used, and brakes are fitted. These are differentially controlled by the pilot, and as the tail wheel is fully castering the large machine can be manoeuvred very readily on the ground. A hydraulic shock absorber is incorporated in the tail wheel mounting.

Accommodation

An unusual feature of the layout of the "Scylla" is the large proportion of the fuselage space which is occupied by cabins, etc. A glance at the accommodation plan will show that only the stern quarter or so of the total fuselage length is empty. This wide distribution of the load will necessitate careful trimming, and to facilitate this a special luggage compartment is provided between the two lavatories on the starboard side. This compartment is intended to be used for trimming the machine with various loads. If the machine trims tail down, luggage will be transferred from the main luggage hold behind the cabin to the forward luggage compartment.

In the extreme nose of the fuselage is the pilots' cabin. This cabin is entirely covered in, but sliding side windows and roof hatches are fitted. Side-by-side seating and dual controls are provided and the instrument board is particularly complete, including in addition to the Smith's instruments a Sperry gyro compass, artificial horizon and a drift indicator, and indirect lighting.



NO WASTE OF SPACE : By utilising a large proportion of the fuselage the cabins are roomy and with plenty of leg room.



WELL AWAY : The Short "Scylla" taking off at a weight of 30,000 lb. The take-off time was 11 sec. (FLIGHT Photo.)

straight in, although normally low steps will probably be used. The front door is situated just aft of the pilots' cockpit, and gives access to a vestibule from which another door leads into the smokers' compartment. When the machine is standing with its tail on the ground, this door is rather high in the air, and fairly tall steps will be necessary. This door is also the one which will be used by the crew in getting into and out of the machine.

At the moment it is not known where and how Imperial Airways, Ltd., propose to use the "Scylla" and the sister plane the "Syrinx." The full petrol capacity is, as previously mentioned, 625 gallons. This is, of course, far in excess of the requirements of a short journey like that from London to Paris. It is of interest to point out that when the full quantity of petrol is carried, and due allowance is made for its weight and the weight of oil and a crew of four, the pay load (*i.e.*, for 600 miles' range) is approximately 5,250 lb. It would appear that this will not permit of the machine carrying the full complement of 39 passengers if these are all of the normally-assumed average weight, as the 5,250 lb. of pay load corresponds to 39 persons at an average weight of about 135 lb. It is, of course, possible that a certificate of airworthiness may be obtained for a greater gross weight than 33,500 lb., in which case the full complement of full-weight passengers

could be carried. On the other hand, the experience of Imperial Airways, Ltd., may be that for stages of 600 miles the machine will never be full, in which case full load may come inside the present gross weight figure.

We on FLIGHT have long made it a practice to give, as a structural "Figure of Merit," the ratio of gross weight to tare weight of aircraft. For the Short "Scylla" the value is 1.48, which is somewhat below the average and indicates that the structure is rather heavy. It is always desirable, if a fair comparison is to be made, to specify what is included in the term "tare weight." In the case of the "Scylla" the expression includes very elaborate cabin furnishings, and this fact may partly account for the somewhat great weight. Another thing which may have played a part in putting up the empty weight is the necessity of designing the undercarriage for an existing wing arrangement.

It is possible, although without knowing all the data it is impossible to express a definite opinion, that the use of metal covering for the fuselage has worked out rather heavier than would a fabric-covered structure. Altogether there may be many reasons for the slightly heavy tare weight of the machine. The subject is one of interest mainly to aircraft engineers, and the "Scylla" as she stands is certainly capable of useful work on air lines.



NEAR THE MEDWAY : The Short "Scylla" looks at her home. (FLIGHT Photo.)

AIR TRANSPORT & COMMERCE

RAILWAY AIR SERVICES, LIMITED

LAST week the new company, known as Railway Air Services, Ltd., which has been formed by the four group railways and Imperial Airways for the purpose of operating internal air lines, issued the following announcement:—

Each of the four group railways and Imperial Airways is represented on the Directorate, which is as follows:—Sir Harold Hartley, Chairman, representing London Midland & Scottish Railway; Lt. Col. H. Burchall, representing Imperial Airways, Ltd.; Mr. S. B. Collett, representing Great Western Railway; Mr. O. H. Corble, representing London & North Eastern Railway; Mr. G. S. Szlumper, representing the Southern Railway. The registered offices of the company are at Airway Terminus, Victoria.

As an immediate result of the formation of the company, the Southern Railway have, in conjunction with Railway Air Services, Limited, concluded arrangements with Spartan Air Lines to operate as from May 1, 1934, a joint air service between London and the Isle of Wight. Full details of this service will be announced later. The London-Isle of Wight route was operated successfully during last summer by Spartan Air Lines, with an each-way service between London and Ryde and Cowes.

The London Midland & Scottish Railway will institute a regular air service to be operated by Railway Air Services, Ltd., between London and Glasgow, via Belfast. The intermediate points at which this service will call have not yet been definitely decided, but a full announcement regarding the arrangements will be made as early as possible.

IMPERIAL AIRWAYS REVENUE

THE receipts of Imperial Airways in January, including the revenue from the extension east of Karachi, amount to £97,567. The corresponding figure for last year was £85,477. During the month, 195,629 tons-miles were flown, against 156,268 for the same period last year. For the ten months ending January 31, the total receipts amounted to £1,087,941, an increase of £136,449. During this same period an increase of 275,118 miles flown was recorded, and the number of ton-miles was up by 466,657.

LONDON-BERLIN IN FOUR HOURS

WHEN the summer flying programme of Deutsche Luft Hansa comes into force on May 1, it will be possible to fly from Berlin to London and back in one day. Leaving Berlin at 7 a.m., a Junkers Ju.52/3m machine will reach London at 11.25 a.m. The return journey will be started at 4 p.m., and Berlin will be reached four hours later. In 1923, when the Berlin-London service was opened, the single trip took about 10 hours. When fitted with three B.M.W. "Hornet" engines, the Ju.52 cruises at about 143 m.p.h.

sible. Owing to the fact that this route involves two sea passages, it is exceptionally suited to air transport, as it enables the speed of aircraft to be utilised to the greatest advantage.

Provided satisfactory arrangements can be made with the aerodrome owners, it is proposed that Railway Air Services will operate, for the Great Western Railway, services between Plymouth, Cardiff and/or Bristol, and Birmingham, with a possible extension to Liverpool. It is the intention that these services will link up with other services of Railway Air Services, Ltd.

So far as the London & North Eastern Railway is concerned, geographical and other considerations affecting the territory served by that company are such as to render the provision of air services rather less urgent than in other parts of the country.

Whilst it is improbable that the L.N.E.R. will decide to establish a service during the current year, they are having certain routes carefully surveyed with a view to arriving at a decision as to the lines on which air services should be provided in the future.

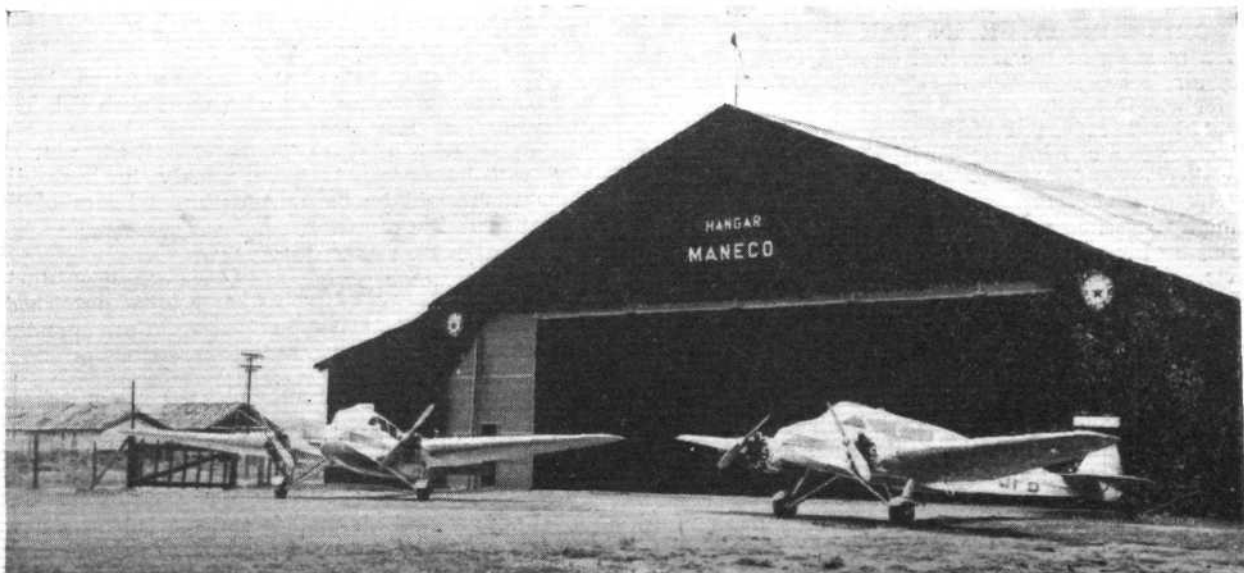
This co-operation between rail and air transport undertakings is intended to encourage and popularise combined rail and air travel, and will provide special facilities for the through booking of passengers and their baggage by rail, air and boat services.

Further announcements as to the operation of inland air routes by Railway Air Services will be made as the individual companies decide other routes they wish to operate.

MISR AIRWORK SERVICES

DURING the period March 8-13 the Misr Airwork regular services have again been running to capacity. On the Upper Egypt northbound service the aircraft were doing their best to accommodate all the returning holiday makers before the end of the month, when the service closes until next winter. It is interesting to note that the Cairo-Alexandria service has been carrying the maximum number of passengers on both the northbound and southbound routes. The number of passengers carried on the various services were:—Alexandria twice-daily regular service, 68; Palestine twice-weekly regular service, 19; Upper Egypt twice-weekly regular service, 8. The total number of passengers carried during the week was 95.

Among those who travelled on the regular services in the week may be mentioned the following:—Baron Empain, Lady Trent, Mr. Lindemann, Ibrahim Bey Nagali, Madame Ibrahim Bey Nagali, Fouad Bey Narris, Mr. F. C. Brown, Kamal Bey Sidhoum, Maitre Bahri, Col. Tyrrell, the Rev. Ferguson, Maitre Badr Bey, Darwish Bey, Fahmy Bey El-Esawi, Miss de Rougemont, Mr. T. H. C. Raikes, Maitre Aly Bey Allouba, Prince de Horthy, Miss Cross, etc.



MONOSPARS IN BRAZIL: Two Monospar ST.4 machines operated by Viacao Aerea Sao Paulo (VASP) of Brazil.

The following charter flights were carried out:—*March 9.*—H.E. the High Commissioner chartered two machines to take himself and party to Ilkyad to shoot. A "Dragon" was sent to Luxor on March 8 to bring Baron Empain, his two daughters and party of four back to Cairo on the following day. H.E. Talaat Pasha Harb and party chartered a "Dragon" and flew down to Suez to witness the departure of pilgrims to Mecca in the new Misr boat, the *Zamzam*.

March 10.—H.E. Taher Pasha engaged a "Dragon" and took a party of friends for an hour's flight over Cairo and as far as Suez and back.

March 11.—Mr. Muntz chartered a "Puss Moth" to take himself and Mr. Mahony to El Rahamna to shoot.

The regular service from Assouan to Cairo on March 10 had the honour of carrying H.M. the ex-King Alfonso of Spain and his A.D.C. On arrival at Almaza, His Majesty expressed great pleasure at the journey, and congratulated the officials on the extreme comfort experienced during the flight, and also on bringing the aircraft to Almaza exactly to schedule in spite of a very strong head wind.

SHETLAND WANTS AN AIR SERVICE

SHETLAND COUNTY COUNCIL want an air service to the islands, and have approached both Imperial Airways and Highland Airways. The former replied that as soon as Railway-Air Services were in a position to decide what services were to be operated, they would pass the application on to the proper quarter. Captain Fresson, of Highland Airways, replied that though he had been running his service to the Orkneys with 95 per cent. regularity, he had had no decision from the Post Office about the mail. He pointed out that aeroplanes flying to the Shetlands would need a proper radio and meteorological service, and also a proper landing ground. It was announced later that Captain Fresson had accepted an offer for an aerodrome at Sunburgh. He offered a connection twice a week, when possible, this summer. One of the Councillors, Mr. Magnus Shearer, stated that Col. Lindbergh had approved of Shetland (Lerwick) as a stage on the transatlantic route, as the fogs shift quickly from off the islands.

PRIME MINISTER TO OPEN AIR LINE

On Friday, April 6, the Prime Minister will inaugurate the new Glasgow-Belfast-Liverpool-London air service, which is being operated by Midland & Scottish Air Ferries, Ltd. The ceremony takes place at Speke Aerodrome, Liverpool, at 2.30 p.m., and will be preceded by an official luncheon at the Town Hall of Liverpool at 1.0 p.m. Among the guests will be: Lord Londonderry, the Secretary of State for Air; Lt. Col. F. C. Shelmardine, the Director of Civil Aviation; and the Lord Mayors of the cities and towns served by the new line. Mr. John Sword, managing director of the operating company, will, on that day, take delivery of the Avro 642, which is fully described on pages 319 to 323 of this issue.

AIR TRAFFIC FROM PORTSMOUTH

PORTSMOUTH, SOUTHSEA & ISLE OF WIGHT AVIATION COMPANY were very busy over Easter and their net traffic showed an increase of 132 per cent. over that of the Easter last year. Between Portsmouth, Ryde, Shanklin and Shoreham-by-Sea they carried 673 passengers between March 29 and April 2.

HEREFORD-WORCESTER IN TEN MINUTES

At a meeting of the Hereford Council recently, a ten-minute air service between Hereford, Gloucester and Worcester was forecast.

TO PARIS WITHOUT PASSPORTS

WEEK-END air trips to Paris should now be more popular than ever, for—commencing with Easter's consignment, which was a record one, by the way—British, French or Belgian passengers resident in the United Kingdom travelling by air to Paris for the week-end no longer need passports. This applies for outward journeys on Friday, Saturday and Sunday, for return up to and including the following Tuesday. British subjects are, however, required to carry some document by which they can establish their identity.

BRISTOL ACTIVITY

EASTER week-end brought good business to Western Airways, Ltd., who have their headquarters at Bristol Airport. The following special charter trips were made by aircraft of this firm:—From Bristol: Le Touquet (twice), London, Southampton (twice), Teignmouth and Romford. On the previous Sunday a "Dragon," two "Puss Moths" and a "Gipsy I Moth" were sent to Leighterton from Bristol to give short flights to a large number of the staff of Listers, of Dursley. In spite of the dearth of good

landing grounds in Devon and Cornwall, quite a number of machines passed through Bristol Airport *en route* for Glorious Devon and the Duchy during Easter.

K.L.M. IN THE WEST INDIES

ON the occasion of the festivities which are to be held at Curaçao, K.L.M. intends to send a special aeroplane to the West Indies. It is said that the company hopes later to develop an air route in the archipelago, working in conjunction with Pan-American Airways.

INAUGURATION OF BERLIN-WARSZAW SERVICE

It is probable that the service between Berlin and Warsaw will be started on April 29. The service will be operated jointly by the Polish P.L.L. "Lot" Company and D.L.H. This latter company intends to use Rohrbach "Rolands," while the Polish firm will employ Fokkers. At first the journey will take 3 hr. 40 min., but later this will be cut down to 3 hours.

AIR MAILS—LATEST TIMES OF POSTING

THE Postmaster-General announces that, as from April 3, in consequence of changes in the air services, the latest times, weekdays, of posting air mail correspondence for Bulgaria, Czechoslovakia, Danzig, Hungary, Lithuania, Roumania, Russia and Yugoslavia in the air mail letter-box outside the General Post Office, London, will be as follows:—Bulgaria, 7.15 a.m., 8.0 p.m.; Czechoslovakia, 5.0 a.m., 7.15 a.m., 7.45 a.m., 8.0 p.m.; Danzig, 5.0 a.m., 7.45 a.m.; Hungary, 5.0 a.m., 7.15 a.m.; Lithuania, 5.0 a.m., 7.45 a.m.; Roumania, 7.15 a.m., 7.45 a.m., 8.0 p.m.; Russia, 7.45 a.m.; Yugoslavia, 7.15 a.m., 8.0 p.m. For the corresponding latest times of posting at other offices, inquiry should be made locally.

D.H. 86's FOR IMPERIAL AIRWAYS

AN order has been placed by Imperial Airways with the de Havilland Aircraft Co., Ltd., for a number of D.H. 86 "Express" commercial biplanes (four "Gipsy Sixes"). These aircraft will be used on the Continental services and on the internal air lines to be operated in Great Britain by Railway Air Services, the new company in which the four big railways are interested. As the result of modifications made since the first flights of the "86," the top speed has been raised to 175 m.p.h. The cruising speed is between 145 and 150 m.p.h. The cabin of the first machine of the type has been furnished to accommodate ten passengers and has been decorated with panelled walnut. Work is already going forward at full speed on the batch ordered by Imperial Airways, and shifts will work night and day. It is expected that the first machine of the order will be delivered by the end of June.

SOME ITALIAN STATISTICS

ACCORDING to the official report on Italian air traffic during 1933, the Italian airway system, which includes, besides the 30 lines in Italy, the airlines in Albania and the Italian colonies, flew 11,160 miles. From January 1 to December 31, 1933, 2,900,000 miles were covered in 28,857 flying hours. Commercial aircraft carried 43,068 passengers, 663,500 lb. (301,557 kg) of mail and newspapers, 1,245,000 lb. (565,278 kg) of luggage and 415,000 lb. (188,723 kg) of goods. Traffic was heaviest on the following connections:—Rome-Naples-Palermo (3,755 passengers), Rome-Cagliari-Tunis (3,741 passengers), Portorose-Zara-Lagosta-Brindisi (3,453 passengers) and Rome-Milan (3,225 passengers).

A ROME-BUCHAREST SERVICE

DURING the spring, the Società Aerea Mediterranea will operate, in conjunction with the Polish P.L.L. "Lot" Company, a fast service between Rome, Sofia and Bucharest, with stops at Tirana and Bucharest. The service will be operated thrice weekly in both directions. Thus Rome will be brought within 8 hours of Sofia and 10 hours of Bucharest.

SWISS AIR TRAFFIC IN 1933

INTERNATIONAL SWISS AIR LINES obtained, during 1933, the following results. The figures were published by the Swiss Federal Air Office at Berne. Corresponding totals for 1932 are given for comparison:—

	Mileage	Paying Passengers	Air Mail lb.	Freight lb.	Excess Baggage lb.
1933	1,311,000	34,514	582,000	935,000	185,000
1932	741,000	29,189	462,500	868,000	154,100

BERLIN-HAMBURG FREIGHT SERVICE

FREIGHT and air mail is transported on a new express service of the German Railways (Deutsche Reichsbahn) which has been inaugurated between Hamburg and Berlin. Unlike the smaller Reichsbahn services, which are operated by night, this route will be flown only during the day.

AIRPORT NEWS

CROYDON

AIR traffic records were easily broken at Easter. On Thursday and Good Friday alone, Imperial Airways, Ltd., carried 450 people abroad in 26 aeroplanes, and Air-France ran full up with additional machines supplementing regular services. Nearly 100 passengers on these two days flew by Imperial Airways, Ltd., to Le Touquet, where, within an hour of oppressed London, one may play roulette. The same Government which forbids us to take an Irish Sweep ticket lest we should become uncontrollably dissolute as a nation does all in its power to facilitate British gambling at Le Touquet by providing "no passport" facilities when you fly there.

Olley Air Services, Ltd., have been busy this Easter. Mr. Olley himself is away on a seven-day tour of Scotland with a client. His headquarters will be St. Andrews, and between bouts of golf the less serious recreation of looking for the monster in Loch Ness from the air will be indulged in. If there is anything to be seen, the air is the place to see it from. Mr. "Bill" Ledlie, the well-known and popular "charter" pilot, has joined Olley Air Services, Ltd., and has been busy at the Paris end during Easter with a "Puss Moth" on an extensive air tour. Amongst recent notable passengers was Mrs. Margaret Torrey, who flew to Africa and back by Imperial Airways, Ltd. Actually Mrs. Torrey, who is 81, had the most comfortable and easiest travel imaginable, which was probably why she chose to do the journey by air. Some of the newspapers are incurably old-fashioned, and on reading their account of the matter, one would suppose she had travelled in one of Col. Cody's early machines. One journal, which probably regards itself as up to date, produced the following: "Surely in the long record of women's achievements in the air there is nothing to compare with the exploits of this fearless woman." Nothing—except the "exploits" of hundreds and hundreds of elderly lady passengers who find long journeys by air much less trying than by any of the more old-fashioned ways of getting about. By the way, have you noticed how many ships have been in difficulties recently owing to fog? Practically no interruption, scarcely even five minutes' delay, has been experienced in air services.

On Wednesday, March 28, the Mayor of Plymouth arrived at Croydon by Provincial Air Lines, Ltd. He was met by Ford Motor Co. representatives and taken to Dagenham.

Maj. Chevalier Willy Coppens, D.S.O., M.C., Belgian Air Attaché, Paris, arrived at Croydon in a Belgian military "Puss Moth" during the week and flew back again the following day.

The first consignment of strawberries came in by K.L.M. from Holland for Covent Garden, literally worth a guinea a box almost. Another K.L.M. cargo of an unusual nature was a consignment of cockroaches for some sort of research work. I am told that all the services to Holland

were fully booked over the holiday period, but no extra machines were required. The K.L.M. traffic is mainly business people and not holiday-makers. The Mayor of Southampton, the Earl of Warwick, Miss Laura La Plante, the Harbour Master of Stockholm, and Lord Halsbury are a few names taken at random from recent passenger lists.

A. VIATOR.

HESTON

MARCONI'S Wireless Telegraph Company have completed arrangements for the installation of a Marconi Service Depot at Heston. Private owners and commercial services will now be able to have tests made on their equipment by a resident Marconi engineer, and repairs carried out in a fully-equipped workshop on the spot.

On Wednesday, March 28, the Secretary of State for Air took delivery of an Avro "Club Cadet" from Henlys, Ltd., at Heston, where he learned to fly last year with other members of his family. The engine has a Siddeley hand-electric starter operated by a button in the cockpit. The machine is finished in silver, with Lord Londonderry's colours—lilac and yellow—painted on the rudder and wing tips.

The latest "A" licence in the Heston School of Flying has been acquired by Lord Lloyd.

Four aeroplanes of Birkett Air Service were engaged in passenger and Press taxi work for the Grand National. Birkett's were, in fact, instrumental in securing for an important national evening paper a speed service from camera to reader which is believed to constitute a record. Pictures of the race were transmitted to London by telephoto from the newspaper's special unit on the course at Aintree. An edition was rushed into print, and at 5.25 a Birkett aeroplane left Hatfield, to the north of London, carrying the newspapers to Liverpool, where they were on sale in the streets shortly after 7 p.m. Two Birkett aeroplanes were away on taxi work on Sunday, March 25, and three on March 27.

The British Air Navigation Company's Easter services to Le Touquet were booked to capacity, and on Thursday and Friday a relief service was run.

A new D.H. "Leopard Moth" has been purchased by Wrightson & Pearse for their "fly yourself" hire fleet, which now comprises four machines; the "Leopard," a "Puss Moth," a "Gipsy I Moth" and a "Cirrus II Moth." The daily rate for the "Leopard" is £3, excluding fuel and insurance. The latter is now effected at £1 a day, covering any number of flying hours, instead of by the previous hourly method.

A. V. Roe, Ltd., have acquired a licence to manufacture Autogiros, and are now laying down fifty of the C.30p. type.

On Sunday, March 25, 110 teas were served at Heston, and for the first time this year visitors had tea out of doors.

Karachi airport news

A NEW 10-k.w. floodlight fitted with a shadow bar has been under erection at the airport during February. Preliminary tests have been made this month prior to putting the light into permanent operation. The light, which also acts as a beacon, revolves once every five seconds, and when slightly elevated above the horizontal plane should be visible to approaching aircraft on clear nights at a distance of about 80 miles. The Aero Club has been very active during February, and there has been a considerable amount of night flying. This was done on seven nights in February, during which 108 landings and departures were made. Fourteen other night flights were made by aircraft belonging to operating companies. The total number of arrivals and departures of regular British, foreign and Indian air mail services was sixty-two. Vicomte de Sibour, in the D.H. "Dragon," G-ACKD, arrived on February 1 on a flight from Singapore to England. He departed five days later. Mlle. Hilz arrived on February 11 from Paris in a Breguet 27 milliare type

sesquiplane, and left for Tokyo on the same day. On February 22, M. Chartoire arrived from Paris. He left for Saigon four days later. A. D.H. "Puss Moth," the *City of Ahmedabad*, flown by Mr. Dhargalkar, arrived from Rajkot on February 26. This machine carried as passenger Mr. Tyeb Ali, who has large business interests in India and Africa. The machine left for Ahmedabad via Jodhpur on February 23. Wing Com. Crosbie, of the de Havilland Aircraft Co., left Karachi on February 3 in a "Leopard Moth" for a tour of India.

British power boat exhibition

BRITISH power boats of all kinds will be on exhibition at the British Power Boat Works at Hythe, near Southampton, from April 17 to 28. That amazing racing boat, *Miss Britain III*, which it will be remembered was raced in America with such credit by Mr. Hubert Scott Paine, will also be on view. Another of Mr. Scott Paine's productions in which our readers will be interested are the many forms of R.A.F. tenders.

AIRISMS FROM THE FOUR WINDS

Rubin and Waller at Jodhpur

MR. BERNARD RUBIN and Mr. K. Waller, who are surveying a possible route to Australia for the MacRobertson Race, have reached Jodhpur after being delayed for two days at Basra, where they had difficulties concerning permits to fly over Persian territory.

Another England-Australia attempt

MR. H. L. BROOKE, a member of the York County Aviation Club, left Lympe at dawn on the morning of Wednesday, March 28, on an attempt to break the record for the England-Australia trip held by Sir Charles Kingsford-Smith with the time of 7 days 3 hours. Mr. Brooke was flying the "Puss Moth" ("Gipsy III") *Heart's Content*, in which Mr. J. A. Mollison made an Atlantic crossing. A few hours after leaving Lympe, while flying through fog, he crashed in deep snow near Genholac, in the Cevennes. The machine was completely wrecked, but Mr. Brooke escaped with nothing worse than some bad bruises. For five hours he wandered about in the mountains, and eventually found a small village, where he was given every attention. Later he returned to the wreck of his machine, and removed the instruments and other articles of value.

Campbell unsuccessful

SIR MALCOLM CAMPBELL has returned to Capetown after having failed to find the gold for which he was searching. Although he will sail for England on Friday, Sir Malcolm may return to continue his treasure hunt.

An Antwerp-Leopoldville trip

We have received from a Belgian correspondent details of the flight made by M. and Mde. Guy Hansez from Antwerp to Leopoldville. Leaving Antwerp at 5.40 a.m. on Saturday, March 24, in a D.H. "Fox Moth" ("Gipsy Major") (not a "Dragon" as recorded last week), M. and Mde. Hansez arrived at Leopoldville at 5 p.m. on Wednesday, March 28, thus taking five days for the trip. Their itinerary was as follows: Saturday, Antwerp-Toulouse-Alicante. Sunday, Alicante-Oran-Colomb Bechar-Reggan. Monday, Reggan-Bidon 5-Gao-Niamey. Tuesday, Niamey-Lagos-Douala. Wednesday, Douala-Pointe Noire-Leopoldville. It was not the intention of the couple to establish any records, but to show that such a flight was a feasible proposition. The postal authorities allowed them to carry mails, which were safely delivered according to schedule. It is hoped that the Belgian Government and S.A.B.E.N.A. will be sufficiently impressed that they will make some definite decision regarding the "proposed" air line to the Congo. It is now two years since an agreement with the French Government was signed, and Sabena have had on hand for about two years at least five machines, bought specially for the service. However, nothing has been done finally to get the service working. Messages of congratulation have been received by M. and Mde. Hansez from the Minister for Transport and the Minister for the Colonies.

Large plane for Soviet propaganda

THE construction of what is claimed to be the largest land plane in the world, named the *Maxim Gorki*, has been completed near Moscow. It is expected that the maiden flight will be made over the Red Square in Moscow during a big parade on May 1. The new aircraft is an eight-engined monoplane with a span of 210 ft. A broadcasting station and a printing shop with a power plant worked by two petrol motors are provided for in the design. No accurate performance figures are yet available, but it is expected that the speed of the machine will be between 135 and 150 m.p.h. Twelve teams of horses,

ten lorries, four tractors and 150 men will be needed to drag the sections of the machine from the Zagi Works to the aerodrome where the machine will be assembled. Fences, newspaper kiosks, tramcar signs and similar obstacles will have to be removed to allow for the passage of the wings.

Dirigibles to attempt rescue of "Chelyuskin"

COM. PROKOFIEV, of "Stratostat" U.S.S.R. fame, in an interview with representatives of the Soviet press maintains that the great advantage of using dirigibles in the attempted rescue of the crew of the ill-fated research ship *Chelyuskin*, is that no special landing ground is needed, and, as has been proved many times, a dirigible can easily be landed on water. The Soviet dirigible B.2, says Com. Prokofiev, can be used for direct flights to the Schmidt camp from the mainland. The dirigible B.4 can be used for carrying provisions and spares and for storing gas for the B.2. Small balloons will accompany the dirigibles, and these may be used at a height of over 3,000 ft. for signalling purposes. A gas-producing unit and a large quantity of chemicals from which hydrogen may be produced will last the expedition several months. Birnbaum, who has done much valuable work in connection with the stratosphere attempts, will be in command. All the other members of the expedition will be experienced pilots.

Dr. Eckener's visit

At a meeting of the All People's Association, held at the Scala Theatre on Tuesday, March 27, Dr. Hugo Eckener, who is president of the group of the Association's branches in Germany, made some very interesting forecasts regarding future Trans-atlantic Zeppelin services. One service would be an improved version of the existing service between Friedrichshafen and Rio de Janeiro, another from Rio to Washington and thence to Europe, and one from a point in North America, perhaps Washington, to a junction near the Pyrenees, and on to the Dutch East Indies. Four airships, each carrying 50 passengers, half a ton of mail, and 15 to 20 tons of high-grade freight, would be required for the efficient operation of this service. Discussing economic considerations connected with the operation of Zeppelins, Dr. Eckener said that the conclusion had been reached that an airship similar to those



A FLYING AMBASSADOR: His Excellency Sir Francis Humphrys, the British Ambassador at Baghdad, is a flying ambassador, for he owns and flies his own machine. The latter, a D.H. "Leopard Moth," was flown out to him from England recently, and here we see him starting up the engine prior to a 200-mile flight to Mosul, in Northern Iraq, with his son and daughter—who may be seen in the background on the right.

described above would, for a start, suffice for the South American service. Using this type of ship, the cost of a one-way trip would be about 125,000 marks (£10,000). Receipts of 75,000 marks from passengers, 40,000 marks from mail, at least 20,000 marks from high-grade freight and excess baggage could be counted on, which would total about £11,000. This would mean a profit of about £40,000 a year. The capital required would be about 7,000,000 marks, or £550,000, for each dirigible. Using four crude oil engines of about 900 h.p. each, the airships would have a speed of about 80 m.p.h. Helium would be used instead of hydrogen to minimise the fire risk. Dr. Eckener was not a little disappointed that the capital required for the construction of airships and "harbours" had not been forthcoming. He could not, he said, easily imagine it possible for a long time yet, to build aeroplanes capable of transporting any considerable load in regular service over the North Atlantic. The airship, he maintained, would always be more comfortable and offers more luxurious travel than the aeroplane. On Tuesday, March 27, Dr. Eckener was the guest of honour at a luncheon given by the All People's Association at Claridge's Hotel. Dr. Eckener left London on the following day for Friedrichshafen.

Pope's interest in Everest flight

We recorded last week that Col. Etherton, of the Houston Mount Everest Expedition, who is at present making a lecture tour in Europe, was to be received by the Pope. On Sunday, March 25, Col. Etherton was received in private audience. The Pope displayed a wide knowledge of the work of the expedition, and recalled his own mountaineering experiences on Monte Rosa and Mont Blanc. He mentioned that he had watched some of the earlier flights made by Maurice Farman, and looked forward to the day when aircraft would be able to take off and land in a more restricted space, when it might be possible for the Vatican to have its own airport. The Pope accepted a copy of the book "First Over Everest." In giving Col. Etherton a medal commemorating the opening of the Holy Door in St. Peter's, the Pope sent his blessing to all members of the expedition.

Nobile commands Soviet dirigibles

UNDER the command of General Nobile, leader of the ill-fated Polar expedition, three Soviet dirigibles have arrived at Sebastopol to take part in the manoeuvres of the Soviet Black Sea fleet. After the manoeuvres, it is expected that they will fly to the Far East.

The Florinne helicopter

ON Thursday, March 22, at Rhode St. Genese, Belgium, the Florinne helicopter was demonstrated before members of the State Aerodynamical Laboratory. Two very successful demonstration flights were made. Among the numerous celebrities of the aviation world who were present were Col. Daumerie, the Belgian Director of Civil Aviation, and M. A. Galopin, of the Ministry of Transport. The helicopter ascended very smoothly at a surprising speed, and having reached a height of about 100 ft., performed some remarkable forward and backward movements. The descent was made at a very low speed and the landing was surprisingly gentle. Soon the machine is to be taken to Everlez for a new series of experimental flights.

News from the Stratosphere

RESULTS obtained during the flight of the Soviet "stratostat" U.S.S.R. have been published by the Geodesic Observatory at Leningrad. At an altitude of 18 500 m. the air contains 20.95 per cent. of oxygen. The nitrogen content and the quantity of inert gases also differ little from the composition of the air near the surface of the earth. The intensity of the cosmic rays rises considerably with altitude. At an altitude of 7.56 miles (12.16 km.) the maximum temperature is minus 57 deg. and the lowest pressure is equal to 51 mm. The Geodesic Observatory is now planning the details of the stratosphere flight to be attempted this year, and is producing instruments considerably more efficient than those used on previous attempts. It has been decided to extend the programme of observations, which will include the pressure of the electric field and the conductivity of the atmosphere. The pressure of solar, etc., radiation will also be investigated. A second test of the new envelope of one of the balloons of the "automatic stratostat," designed by the Air Institute of Leningrad, was made some days ago. When filled with 3 kg. of hydrogen the envelope had a diameter of 6.56 ft. (2 m.). A radio apparatus was



FOR THE "SKYBIRD LEAGUE" RALLY: These cups and the solid silver replicas are offered for the winner and runner-up in the competition for Scale Model Aircraft now being held in connection with the First Annual "Skybird League" at Hamleys, Regent Street, until April 14.

attached. Information regarding the temperature, pressure and moisture of the air was transmitted on a wave length of 25 m. Simultaneous observations were made from theodolites at two different points. One hour after leaving the ground the balloon had reached the stratosphere. At an altitude of 26,900 ft. (8 200 m.) the temperature fell sharply. The temperature at 61,024 ft. (18 600 m.), where the balloon reached its maximum altitude and burst, was 55 deg. The scientific apparatus descended by parachute, dropping, it was supposed, either in Finland or Lake Ladoga. The quality of the envelope has yet to be improved, but it is thought that with two or three balloons of this kind the stratostat will reach an altitude of 25 to 30 km.

Round the Isle of Wight Race

WE understand that Portsmouth, Southsea and Isle of Wight Aviation, Ltd., are proposing to run the "Round the Isle of Wight Air Race" again this year on July 21. In connection with this race Mr. Alexander Duckham is giving a very handsome challenge trophy for "B" licensed pilots. This trophy will take the form of a large cigar box on top of which, appropriately enough, as this is the 25th anniversary of that great event, a replica of the memorial erected by Mr. Alexander Duckham on the Dover Cliffs to commemorate the safe arrival of M. Bleriot after his first crossing of the Channel. A replica of the trophy will be given to the winning pilot each year.

Fokker acquires Lockheed licence

DURING his recent visit to the U.S.A., Anthony Fokker acquired, besides the licence for the Douglas D.C.I. "Airliner," the constructional rights for the Lockheed "Electra." The latter aircraft was described in FLIGHT for January 25, 1934. It is stated that during test flights the machine attained a top speed of 221 m.p.h. at 5,000 ft., which is at least 5 m.p.h. in advance of estimates. As the result of minor modifications which are at present being made, it is expected that the speed will be raised still further. We were somewhat surprised recently when we saw a set of drawings prepared by the Fokker company, of the Douglas D.C.I. converted into a military type. Bombs, torpedo and four machine guns are shown.

Mussolini receives Mr. Plesman

MR. PLESMAN, General Manager of the K.L.M. company, has been received by H.E. Sig. Mussolini, who, it must be remembered, is now the Italian Minister for Air. Questions concerning civil air navigation were discussed.

Brooklands on race days

It should be noted that Brooklands Aerodrome is out of bounds to visiting pilots on race meeting days between the hours of 1 p.m. and 5.30 p.m. They will, however, always be welcome before and after those times. Should they arrive before 1 p.m. permission to leave during the afternoon will be granted on application to the Control.

FROM THE CLUBS

HATFIELD, THE LONDON AEROPLANE CLUB

Among new members, last week, were Messrs. J. Addison and L. P. Williams. Mr. J. Harris, the chief instructor, has now completely recovered from his illness and is back at the club. Weather conditions during the past week were very favourable, and on Sunday, March 25, 30 aircraft of all types, including an Autogiro, visited the aerodrome. Most of the private owners have been very active, taking advantage of the fine weather to increase their flying hours. The swimming pool was filled in readiness for Easter. On the evening of Saturday, March 24, a "Pirates" dance was held, and skulls and cross bones, barrels, boxes, planks and tree trunks were to be found everywhere. Mr. Leakey, a club member who has done much towards introducing Esperanto, the international language, has produced another booklet which includes aviation terms. Flying times for the week are as follows:—London Aeroplane Club 94 hr. 15 min., R.A.F. Flying Club 8 hr. 20 min., Stage and Screen Aero Club 3 hr.

HANWORTH

Flying time for the six days ending Thursday, March 29, amounted to 54 hr. On Saturday and Sunday, March 24 and 25, when the weather was exceedingly good for flying, 30 hr. were put in by members. All machines were in great demand, and if available, more could have been used. On Wednesday, Mr. Ramsay did the height test for his "B" licence. He was the first person to use the new course, i.e., Croydon-Hamble, Hamble-Cardiff, Cardiff-Croydon. Two new members, Mr. McGrady and Mr. Seymour-Evans, have joined the club. The dinner and dance, which was held at the clubhouse on March 24, was very well attended and proved a most successful function.

BROOKLANDS

Weather has been rather stormy, except during the week-end, which was exceptionally busy. A total of 57 hours was flown during the week, of which 25 hours were dual and 32 hours solo. New members are Messrs. J. Houdret, P. Houdret, B. Mountfort, C. Peppiatt, Campbell and Scot. Successful first solos were carried out by Messrs. Glegg and Grylls. "B" licence was completed by D. Anderson, who has now returned to take up a situation with Midland & Scottish Air Ferries. The Sales Department is still busy. During the week it has disposed of a new "Leopard Moth," a second-hand "Puss Moth" and a "Gipsy Moth." F/O. A. H. Abbott has been taken on as instructor to the Brooklands Flying Club. He has just left the Service and is a qualified C.F.S. instructor. He holds his Blind Flying category.

MIDLAND AERO CLUB

For the period March 18 to March 29, 21 hr. 30 min. dual and 25 hr. 10 min. solo were flown. The total flying time for March was 102 hr. 40 min. Councillor H. S. Goodby and Mr. J. Pruden made successful first solos during the week-end. Mr. E. Baker, of Walsall, has acquired the "Puss Moth" G-IBAU. Many visitors arrived during the month, including Mr. Hordern, of British

Klemm Aeroplane Co., Ltd., flying a Klemm "Swallow," which he demonstrated to the members. Several cross-country flights have been made. On March 28 a lecture on air pilotage was given in the clubhouse by Mr. Jurdon. This was much appreciated, and it is intended that a series of these lectures be arranged.

YORKSHIRE AEROPLANE CLUB, LTD.

About 9 hr. were flown at Yeadon during the week ending March 29. Four private owners, who are members of the Club, left with passengers for Italy, where they will spend a short touring holiday. They are Mr. G. H. Ambler (Monospar), Mr. G. W. Garnett ("Puss Moth"), Mr. W. L. Hey ("Puss Moth") and Mr. J. R. Micklethwait ("Gipsy Moth"). The party will be away for about ten days.

CARDIFF AEROPLANE CLUB

The flying report for the period March 20 to March 25 records 6 hr. 40 min. dual, 9 hr. 40 min. solo and 55 min. test flying. For the following week the figures are 7 hr. 35 min. dual, 18 hr. 35 min. solo and 1 hr. 5 min. test flying. Capt. M. Phillips is a new Associate Flying Member, and Mr. W. H. Milton is a new Flying Member.

SOUTHEND FLYING CLUB

Fine weather brought many visitors to the Rochford Aerodrome during the week ending March 25, when there was great flying activity, over 13 hr. being put in on Club machines on the Saturday and Sunday. Among some interesting visiting machines was one of Hillman's "Dragon" air liners, which brought a party of visitors to Southend-on-Sea. Mr. Page arrived from Heston in the new "Leopard Moth"; another "Gipsy Moth" called in from Hendon, as well as Mr. Monty Wood in his Avro "Avian," and Mr. Joe Scoles in a "Puss Moth." Members had an opportunity of inspecting the "Fox Moth" which it is proposed to acquire with a view to inaugurating a regular air service between Southend and Kent, as well as providing an attractive and comfortable machine for passenger flights. A cross-country trip was made on March 24 by Mr. Sylvester and Mr. Deavin to Eastbourne, and an urgent taxi journey was undertaken to Brooklands to bring Mr. Hilton to Chelmsford in time to take part in a Rugby match. Mr. Glover, late R.A.F. and Auxiliary Air Force, has now taken up his duties as the new Club Instructor and Chief Pilot. He comes with first-class credentials and has a very fine record. He was one of the pioneers on the Cairo-Baghdad air route operated by the Imperial Airways, and some years ago was decorated by the King of Spain for rescuing some Spanish long-distance flyers who were lost in the desert in Iraq. He was an instructor at the Central Flying School and an instructor of instructors with the Canadian Air Force. Mr. Petty, who made his first solo flight, is the first member to do so under the new instructor.

BRISTOL AND WESSEX AEROPLANE CLUB

The figure of 163 flying hours recorded for March is an increase of 68 hr. over the corresponding figure for March,



FOR TRANSPORTING THE S.O.S.: As we have already recorded, Lord Londonderry, the Secretary of State for Air, learnt to fly and obtained his "A" licence at Heston. He has now purchased through Henlys, Ltd., this Avro "Cadet" (Siddeley "Genet") for his own use. (FLIGHT Photo.)

1933. At the end of the Club's financial year, on March 31, it was revealed that 1,761 hours had been flown. This is a record. During the year eighteen "A" licences were obtained by members. A fair proportion of the increase in the number of flying hours may be attributed to the Club's policy of encouraging cross-country flying as opposed to the monotony of circuits and landings, which seem to be the peak of ambition of a certain type of pilot, of which, fortunately, there are few at most clubs.

MARSHALL'S FLYING SCHOOL, LTD.

For the week ending April 1, 16 hr. 30 min. dual and 22 hr. 15 min. solo were flown. Mr. R. Ransom completed tests for his "A" licence and Mr. A. T. Loch made his first solo flight. On March 25 Mr. Hordern visited the aerodrome and demonstrated a British Klemm. Other visiting machines were a "Moth" from Norwich, and a "Leopard Moth" flown by Mr. Martoch. Cross-country and air-taxi flights were made to Chester, Windsor, Horn-castle, Spalding, Leigh-on-Sea and Newmarket. The school machines were kept busy joy-riding during the Easter holidays.

LIVERPOOL AND DISTRICT AERO CLUB

Weather conditions for the first half of March were bad, but there was a great improvement during the latter half. Cross-country flights were made by members to the following places:—Gravesend, Bristol, Leamington Spa, Castle Bromwich, Pershore and Kent. The total flying time for the past week was 77 hr. 50 min., of which 58 hr. 20 min. was solo and 19 hr. 30 min. dual. For March, the total flying time was 209 hr. 10 min.

HULL AERO CLUB

Members are reminded that subscriptions for 1934 are now due, and that it is absolutely imperative to have money in hand with which to carry on the working of the Club. There are many members who have not yet sent in their Share Application Forms, and these should be sent in as quickly as possible. The formalities connected with the formation of the new company are well in hand, but members are not coming forward with their applications, and it is thought that the Club is dependent far too much on outside help. The Hull and Grimsby Branch of the Incorporated Secretaries' Association has sent a very kind invitation to members of the Hull Aero Club to join them at the April Luncheon of their Association. This is being held in the Banquet Room at Powolny's Restaurant, Hull, on April 11, at 1 p.m.; charge 2s. The lecturer is Mr. Hubert Green, who will talk upon "A Business Man's Impressions of Civil Aviation in the U.S.A." The Hull Corporation Aerodrome Committee will be represented at the Luncheon by Alderman Benno Pearlman and Councillor G. K. Spruit, the Blackburn Aeroplane Company by Capt. Norman Blackburn, and the Club President, Maj. J. B. Upton, has also intimated that he will be present.

FROM EGYPT

Cairo School News.—Owing to the popularity of the recent Landing Competition held by the Misr-Airwork School at Almaza, a further Landing and Looping Competition was held on February 24. A large number of members flew during the period March 8-13, including Prince Omar Halim, Mohamed Sultan Bey, Hosni Naguib Effendi, Labeeb Malees Effendi, Sadek Akl Effendi, Metwalli Effendi, Mr. V. Coffey, Mr. S. Leigh, Mlle. Lotfia el Nadi, Maj. Adair, Mr. P. Randolph, Mr. Chedid, Hazeck Effendi, Saleh Enan Pasha, Mr. A. Banin and Mr. G. Marlin. Two

pupils made successful first solos, and Mr. V. Coffey qualified for the renewal of his "A" licence. Mlle. Lotfia el Nadi took her first passenger, Mohamed Sultan Bey, for a flight to the Pyramids. Maj. Adair commenced flying instruction, and intends to qualify for an "A" licence. The special aeroplane fitted up with night-flying apparatus is now ready, and instruction in instrument and night flying will begin next week.

The winner of the Landing Competition held on March 11 was Ali Fathi Effendi. The wind on this occasion was very strong and gusty, as on the occasion of the previous Landing Competition, and it was gratifying to note the flying skill displayed by all the competitors under such difficult conditions. Flying was brisk during the week, 36 hours being flown.

A small and select band of pilots, all pupils or ex-pupils of the Misr Airwork Flying School, have formed a squadron called the "Hawks." This squadron aims at the highest standard of flying, and its objects are to encourage and further the progress of aviation. The members hold themselves in readiness to perform any sort of duty in connection with aviation. They aim to become experts in navigation, maintenance, aerodrome organisation, aerial photography and survey work, and international legislation. They are sportsmen in the true sense of the word, and their motto is "Help one another and all brother aviators." Good luck to them. May success reward them.

Alexandria School News (Dekhela Aerodrome).—Flying has been a little more brisk during the end of February, owing to fine weather, and 22 hours 45 minutes were flown. Miss Maxwell carried out her first solo flight, and Miss Francis and Mr. Kotails joined the School, the latter having already commenced instruction. Mr. H. Lindeman made a cross-country flight to Cairo and return.

CANADIAN FLYING CLUBS

There were 22 light aeroplane clubs in the Dominion last year which had a total of 8,087 hours of flying during the first nine months of 1933, in which period 68 private and 18 commercial licences were granted to members. Sixty-eight aircraft were in use; the total membership was 2,186 and 454 of these were reported taking flying instruction. The Toronto Flying Club was the most active, with 1,090 hours to its credit, while the Edmonton and Northern Alberta Aero Club was second with 639 hours for the nine-month period. Members of the Montreal Light Aeroplane Club, who organised during August their fifth annual air pageant, completed 387 hours of flying. The Webster Memorial Trophy awarded annually to the most competent airman in Canada, was won for the second time in succession by a director of the Montreal Light Aeroplane Club.

A FLYING CLUB AT STALINSK

It is reported in the Soviet Press that the movement for organising flying clubs in every Soviet city has been received with enthusiasm in Stalinsk. Eleven different organisations have supplied the necessary funds to start and a great number of workers have joined. The building of an aerodrome in the city has already been commenced. The Stalinsk Flying Club possesses four aeroplanes and 20 gliders. Gliding has become a very popular sport. The gliding section of the club has 350 members, of whom 15 have received instructors' certificates. Over 500 young people are organised in the model aeroplane section, which has 32 instructors. The four aeroplanes are used for instruction purposes and shortly a small group of the advanced students will qualify for their pilot certificates.



Invitation to private owners

THE Royal Aero Club has received from the Aero Club of Switzerland an invitation to private owners to visit the International Sport and Touring Aviation Exhibition at Geneva, April 27-May 6. Private owners will be the guests of the Aero Club of Switzerland for two days and one night at the best hotels in the town. Each private owner may be accompanied by one passenger, to whom this hospitality will also be extended. Private owners are requested to alight at Cointrin Aerodrome, Geneva, where they will be exempted from landing and housing fees. Private owners wishing to accept this invitation are requested to communicate with the Royal Aero Club, 119, Piccadilly, not later than April 10, stating name of passenger, if any, registration letters of aircraft and aerodrome of departure.

Turkish military mission in France

A TURKISH "Study Committee" which intends to inspect the latest types of military aircraft in Europe, is at present visiting Paris. We may recall that for some time past the majority of aircraft supplied to Turkey have been of American manufacture. Recently a large number of Curtiss "Hawk" single-seater fighters with Wright "Cyclone" engines were delivered. It seems, however, that in the commercial aircraft field America has not been so successful, for although a Curtiss "Kingbird" was sent out to Turkey, no order was placed for aircraft of this type. Mr. Leighton, a representative of Curtiss-Wright in Europe, has permanent offices in Istanbul. About eight years ago the Turkish Government held a competition for single-seater aircraft, and the Dewoitine and Nieuport companies both sending aircraft.

THE ROYAL AERO CLUB OF THE UNITED KINGDOM

OFFICIAL NOTICES TO MEMBERS

THE Annual General Meeting of the members of the Royal Aero Club of the United Kingdom was held in the club premises, 119, Piccadilly, London, W.1, on March 28, 1934. The chairman, Lord Gorell, in his report, after reading a telegram of regret from the President of the club, the Duke of Atholl, expressing his regret that he could not be present, gave a short *résumé* of the activities of the club. He referred to the steady progress shown by private flying and commented upon the fact that 976 "A" licences and 142 "B" licences had been taken out during the year. The number of current licences at the end of the year was 2,609 "A" and 441 "B." The number of new licences taken out showed an increase over the previous year, but the number of renewals a decrease. It was suggested that the medical examination now called for for the renewal of an "A" licence may have affected this question. There had not been much increase in the number of privately-owned aircraft, of which there were now just over 400 out of a total of 1,055 registered aircraft on December 31, 1933.

Air Touring

Thanks were expressed to Lord Wakefield for a donation of £1,500 to the Royal Aero Club for the furtherance of air touring. Air touring abroad had increased considerably and British pilots with British aeroplanes had done more touring abroad than all the other countries put together. 535 carnets were issued. The touring committee had dealt with 45 special flights to places like China, Japan, Australia, Capetown, India, Burma, Kenya, Palestine, Egypt, Turkey, Greece, Malay States, etc. The formalities and regulations hindering the development of air transport are considerable, and it is hoped that good results will follow the united action which is now being taken by the clubs forming the F.A.I. A new type of carnet is under consideration as is the standardisation of Customs procedure. Tribute was paid to the members of committees and sub-committees whose work had been greatly to the benefit of air touring and all private owners and other matters.

Among the questions discussed affecting these were:—Damage caused by aircraft to third parties on the ground; compulsory third-party insurance; convention relating to the cautionary rest of aircraft; barriers to air traffic; special permits to fly through certain countries; pilots' passports and Customs formalities. The presence of a large number of private owners on the committees assured the club being alive to these particular problems. Representation by the Royal Aero Club to the Air Ministry and so to the French Air Ministry resulted in the release of British air tourists who found themselves prevented from leaving France during the recent crisis. Other similar cases were also quoted. In matters like these it was considered gratifying that such a close co-operation existed between the Air Ministry and the club. The excellent services rendered to air touring by the Automobile Association was also referred to, and still closer co-operation was envisaged for the future.

Light Aeroplane Clubs General Council

The General Council represented 22 associated light aeroplane clubs with a total membership of some 7,500 members. During the past year the General Council has dealt with:—Carrying of passengers by holders of "A" licences; medical examination for the renewal of "A" licences; subsidy agreements with the light aeroplane

clubs; liability for damage to third parties on the ground; control of civil flying; Empire Day; Sunday flying.

Affiliated Clubs

The following clubs are directly affiliated to the Royal Aero Club:—Aero Club of South Africa, Aero Club of East Africa, Aero Club of India and Burma, Kuala Lumpur Flying Club, New Zealand Aero Club, Royal Singapore Flying Club, Associated Australian Aero Clubs.

Aviation in Parliament

Appreciation was recorded of the work of the Parliament Air Committee in the House of Commons, and the invitation of the committee to the club to send representations to the informal dinners held in the House of Commons.

Prosecution for Low Flying

Reference was made to the action taken by the club in securing a successful appeal against the decision of the magistrate when Mr. Brie was summoned for dangerous flying over the Kingston-by-Pass Road.

Hospitality Committee

The appointment of the Hospitality Committee of the club, under the chairmanship of Mr. Lindsay Everard, was mentioned, and the valuable work which has been done by the committee in entertaining foreign private owners, sixty of whom had been invited to visit England for the week-end June 30, on the occasion of the R.A.F. Display. Reference was also made to the main meetings held during the year, and to some of the outstanding performances like that of Sqd. Ldr. Gayford and Flt. Lt. Nicholletts in gaining the world's long-distance record.

In conclusion, regret was expressed that the House Secretary, Mr. Stevenson, had been very ill and unable to continue his work in connection with the social side of the club. It was stated, however, that he was making steady progress, and hoped to return before long.

Thereafter Mr. Handley Page presented a statement of the financial position of the club, and Sir Francis McClean proposed a vote of thanks to the chairman.

The following nine members were elected to fill the nine vacancies on the Committee:—Maj. C. J. W. Darwin, D.S.O., W. Lindsay Everard, M.P., Maj. A. Goodfellow, A. C. S. Irwin, J. Lord, Maj. R. H. Mayo, O.B.E., Lt. Col. J. T. C. Moore-Brabazon, M.C., M.P., Lt. Col. M. O'Gorman, C.B., Maj. H. A. Petre, D.S.O., M.C. Col. F. Lindsay Lloyd and Capt. H. S. Broad did not offer themselves for re-election, and Mr. Angus C. S. Irwin and Maj. R. H. Mayo have been nominated to fill the two vacancies.

Election of President and Vice-Presidents.—The following were unanimously elected:—President: The Duke of Atholl; Vice-Presidents: The Duke of Sutherland, Lord Wakefield of Hythe, Lt. Col. M. O'Gorman.

Gliding.—During the year Gliding Certificates have been issued as follows:—"A" 27, "B" 30, "C" 20. During the past year the following British records were established:—August 30, 1933, Flt. Lt. E. L. Mole on the "Willow Wren" at Dunstable, duration 6 hours 55 minutes. October 9, 1933, J. Laver on a "Prüfling" at Thirsk, duration 7 hours 20 minutes.

Offices: THE ROYAL AERO CLUB,
119, PICCADILLY, LONDON, W.1.
H. E. PERRIN, Secretary.

The College of Aeronautical Engineering

DURING his recent visit to London Dr. Eckener, the German airship expert, paid a visit to the College of Aeronautical Engineering, Chelsea, in company with Capt. F. E. Guest. The college is planning to make extensions so that it can take on an extra 25 to 30 students this year in view of the general increase in air transport activity. At the present time some 150 students are going through the college taking the course, which is spread over two years and nine months, starting at Chelsea, continuing at Brooklands and finishing with practical experience at a number of constructional and operating companies.

R.Ae.S. lecture postponed

It is regretted that Capt. Forsyth finds it necessary to postpone his lecture on "Engines," which was to have been delivered before the Royal Aeronautical Society to-day, April 5, until next Session.

Fokkers for Dutch East Indies

AN order from the Military Department of the Dutch East Indies has been received by the Fokker works at Amsterdam for 14 C-10 aircraft. These machines are of a new design and details are not available at present. They are, however, fitted with Rolls-Royce engines.

THE ROYAL AIR FORCE

London Gazette, March 27, 1934

General Duties Branch

The undermentioned are granted permanent commns. as Pilot Officers with effect from March 17, 1934, and with seniority of March 17, 1933:—R. E. G. Brittain, D. N. Kington-Blair-Oliphant, F. A. Paynter, J. A. Robinson, P. B. Wood.

Lt.-Comdr. the Hon. H. M. A. Cecil, R.N., is granted a temp. commn. in the rank of Sqdn. Ldr., on being lent to the R.A.F. (March 15, 1933). Lt.-Comdr. J. B. Heath, R.N., is re-attached to the R.A.F. as a Flight Lieut., with effect from March 17, 1934, and with seniority of Jan. 1, 1931.

F/O. E. F. J. L'Estrange takes rank and precedence as if his appointment as Flying Officer bore date Oct. 16, 1932. Reduction takes effect from Nov. 17, 1933. (This officer resigned his permanent commn. on Jan. 4, 1934, Jan. 16.)

Air Vice-Marshal R. P. Mills, C.B., M.C., A.F.C., is placed on half-pay list, scale A (March 21). Wing Commr. V. Gaskell-Blackburn, D.S.C., A.F.C., is restored to full pay from half-pay (March 14). Flt. Lt. S. Upton is placed on half-pay list, scale A, from Feb. 26 to March 7, inclusive. Group Capt. J. R. W. Smyth-Pigott, D.S.O., is seconded for service with the Peruvian Government (March 15). Wing Commr. G. G. H. Cooke, D.S.C., A.F.C., is placed on retired list (March 28).

Dental Branch

Flt. Lt. A. P. Atkins, L.D.S., is transferred to Reserve, Class D (i) (March 25).

ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Lt. S. H. G. Trower, R.N. (Retd.), is granted a commn. as Flying Officer in Class A (March 27); J. Peel is granted a commn. as Pilot Officer in Class A (March 12). The undermentioned are granted commns. as Pilot Officers on probation in Class AA (i) (March 27): J. Dendy, J. M. Evans, B. R. Ker, D. W. Llewellyn, M. N. Mavrogordato, W. R. Oliver, E. A. Starling, T. E. Wesson.

The undermentioned are granted commns. as Pilot Officers on probation

in Class AA (ii) (March 12):—D. B. Allison, G. M. Bardolph, G. K. Brackenridge, A. M. Carroll, H. St. J. Coghlan, G. I. L. Corder, J. E. I. Crump, R. K. Curzon, G. W. P. Derbyshire, D. H. Dev, E. C. Eaton, M. L. Fernby, P. J. H. Harrington, J. O. Hedley, K. W. Hole, T. S. R. King, L. Malec, B. J. Sciortino, H. S. Smith, J. G. Tait, M. Wyatt.

The undermentioned Flying Officers relinquish their commns. on completion of service:—S. C. Parker (March 14); P. Johnson (March 26).

Flt. Lt. C. E. M. Pickthorn, M.C., relinquishes his commn. on completion of service and is permitted to retain rank of Sqdn. Ldr. (March 23). F/O. C. A. C. Patton relinquishes his commn. on account of ill-health (March 21).

The undermentioned Flying Officers relinquish their commns. on appointment to permanent commns. in the Royal Air Force (March 17):—R. E. G. Brittain, P. B. Wood.

Flying Officer R. C. Greenhalgh is removed from the Service (March 20).

Medical Branch

T. J. B. A. Macgowan, M.B., Ch.B., is granted a commn. as Flying Officer in class DD (March 27).

Flt.-Lt. E. J. T. McWeeney, M.B., B.Ch., relinquishes his commn. on completion of service (March 24).

SPECIAL RESERVE

General Duties Branch

P/O. H. C. Raphael is promoted to rank of Flying Officer (Jan. 8). P/O. J. Peel resigns his commission (March 12). P/O. J. A. Robinson resigns his commn. on appointment to a permanent commn. in the R.A.F. (March 17).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (BOMBER) SQUADRON.—P/O. P. S. Norris relinquishes his commn. on account of ill-health (March 28).

No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—F/O. J. V. Wood is promoted to rank of Flight Lieutenant (Feb. 24).

No. 607 (COUNTY OF DURHAM) (BOMBER) SQUADRON.—The undermentioned are granted commns. as Pilot Officers:—J. R. Kayll (March 9); M. M. Irving (March 10).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Group Captain A. H. Jackson, to R.A.F. Depot, Uxbridge, 19.3.34, to command vice W/Cdr. F. Sowrey, D.S.O., M.C., A.F.C.

Wing Commanders: H. V. Champion de Crespigny, M.C., D.F.C., to H.Q., Inland Area, Stanmore, 15.3.34, for Air Staff duties vice W/Cdr. G. W. Murlis-Green, D.S.O., M.C. V. Gaskell-Blackburn, D.S.C., A.F.C., to R.A.F. Base, Calshot, 14.3.34, for Administrative duties vice W/Cdr. G. H. Cooke, D.S.C., A.F.C. F. Sowrey, D.S.O., M.C., A.F.C. to No. 3 Armament Training Camp, Sutton Bridge, to command, 19.3.34.

Squadron Leader L. J. MacLean, M.C., to Home Aircraft Depot, Henlow, 14.3.34, for Engineer duties vice W/Cdr. V. S. Brown.

Flight Lieutenants: G. P. Chamberlain to No. 17 (F) Sqdn., Upavon, 14.3.34. H. A. G. Comerford, to No. 40 (B) Sqdn., Abindon, 15.3.34. I. Hodgson, to Station H.Q., Bircham Newton, 15.3.34. H. F. V. Battle, to No. 39 (B) Sqdn., Risalpur, India, 22.2.34. W. A. Opie, to No. 13 (A.C.) Sqdn., Netheravon, 19.3.34. C. F. Sealy, to No. 29 (F) Sqdn., North Weald, 21.3.34.

Flying Officers: J. Cox to Central Flying School, Wittering, 15.3.34. W. Pickersgill, to No. 502 (Ulster) (B) Sqdn., Aldergrove, 15.3.34. G. P. Marvin, to No. 502 (Ulster) (B) Sqdn., Aldergrove, 15.3.34. E. C. W. S. Smith, to Station H.Q., Donibristle, 18.3.34. W. N. Elwy-Jones, to No. 47 (B) Sqdn., Khartoum, Egypt, 14.3.34. P. Haynes, to Special Duty List, 1.3.34, for duty with the Indian Air Force. G. R. Murphy, to R.A.F. Base, Kai-Tak, 4.2.34.

Pilot Officer F. B. Chapman, to R.A.F. Base, Gosport, 16.3.34.

Acting Pilot Officers: The following Acting Pilot Officers are Posted to the

R.A.F. Depot, Uxbridge on 16.3.34, on appointment to Short Service Commissions:—R. M. Atkin, E. R. Bitmead, J. B. Black, J. B. Broly, R. J. B. Burns, D. O'C. Byng-Hall, D. E. Cattell, D. H. Clinch, R. C. Crawford, F. K. N. Cresswell, H. L. Dawson, C. J. S. Dickens, A. H. Donaldson, J. Duncan, C. A. H. Evans, P. Fleming, H. Georgeson, A. J. Guthrie, E. G. Hall, P. F. Handcock, J. D. C. Joslin, W. H. Kearney, J. H. Kitson, L. M. Laws, K. N. Lees, A. R. Leggate, W. C. A. Lodge, R. C. Meares, R. B. Middleton, B. G. Morris, A. D. Murray, R. J. C. Nedwill, D. J. North-Bomford, J. S. O'Brien, G. V. M. O'Reilly, G. S. A. Parnaby, G. I. Pawson, J. Pilling, L. H. Pomeroy, F. H. Roberts, L. W. Saben, P. H. R. Saunders, A. W. Simons, H. M. Starr, J. A. Sutherland, J. M. Thompson, J. E. Thornton, E. A. Verdon-Roe, R. N. J. White, R. D. G. Wight, I. S. Williams, H. D. C. A. Woodhouse.

Accountant Branch

Flying Officer T. P. E. Campbell, to No. 47 (B) Sqdn., Khartoum, Egypt 3.3.34.

Medical Branch

Group Captain B. A. Playne, D.S.O., to H.Q., R.A.F., Halton, 15.3.34, for duty as Principal Med. Officer.

Wing Commander W. A. S. Duck, O.B.E., to H.Q., Inland Area, Stanmore, 21.3.34, for duty as Deputy Principal Med. Officer.

Squadron Leaders: A. Dickson, to Princess Mary's R.A.F. Hospital, Halton, 15.3.34, for duty as Med. Officer. E. A. Lumley, to R.A.F. Depot, Uxbridge, 15.3.34, for duty as Med. Officer.

Flying Officers: H. S. Barber, to No. 1 Armament Training Camp, Catfoss, 14.3.34. D. R. Crabb, to No. 2 Armament Training Camp, North Coates Fitties, 22.3.34.

Operations in Iraq, 1932—Grant of General Service Medal with Clasp "Northern Kurdistan"

1. His Majesty the King has been graciously pleased to approve of the General Service Medal (having on the obverse His Majesty's new Crowned Effigy) with clasp "Northern Kurdistan" being granted to personnel of the Royal Air Force and other imperial forces and to British military personnel serving with the Iraqi forces who participated in the operations against Shaikh Ahmed of Barzan in Northern Kurdistan between March 15 and June 21, 1932, both dates inclusive, and within the area named below, and whose claims are approved by the Air Council or the Army Council, as the case may be.

The area of operations, service within which will entitle to the medal, has been defined as Diana-Erbil-Agra-Suri (junction of Shemsdinan and Greater

Zab Rivers)—due north to Turkish Frontier—along Turkish Frontier to a point due north of Diana—Diana (all places inclusive).

Individuals previously awarded the medal will receive the clasp only.

The grant of the medal will not be made in respect of visits to the sphere of operations or of service of a temporary nature.

Claims of serving R.A.F. personnel are to be forwarded, through C.Os. of units, to the Air Ministry.

Officers and airmen not longer serving should forward their claims to the Secretary, Air Ministry, Adastral House, Kingsway, London, W.C.2. Forms of application may be obtained by officers from the Air Ministry, and by airmen from the Officer in Charge Records, Royal Air Force, Ruislip, Middlesex.

The names of entitled British military personnel will be included in the rolls furnished by the A.O.C., but the medal in such cases will be administered and issue made by the War Office under the authority of a separate Army Order.

At St. James's Palace

HIS MAJESTY THE KING held a Levée on March 27 at St. James's Palace, at which the following were present:—Air Marshal Sir R. Brooke-Popham (Principal Air Aide-de-Camp), Group Capt. R. M. Hill and Wing Com. Sir Louis Greig. Those presented to the King included:—Sqdn. Ldr. G. Bentley, D.F.C.; Sqdn. Ldr. E. Betts, D.S.C., D.F.C.; P/O. C. Brandon; Flt. Lt. D. Brookes; Flt. Lt. G. Carter; Wing Com. W. Caster, M.C.; Wing Com. M. Drummond, D.S.O., O.B.E., M.C.; P/O. C. Flood; Wing Com. H. Fraser; Wing Com. Sir Louis Greig, K.B.E., C.V.O.; Group Capt. W. Guilfoyle, O.B.E., M.C.; Group

Capt. Roderic Hill, M.C., A.F.C., A.D.C.; Sqdn. Ldr. T. James; Flt. Lt. B. Johnson (Royal Canadian A.F.); Flt. Lt. J. Jones; F/O. W. Jones; P/O. L. Lewis; Flt. Lt. F. Long; Group Capt. P. Maltby, D.S.O., A.F.C.; Wing Com. C. Medhurst, O.B.E., M.C.; Wing Com. C. Nicholas, D.F.C., A.F.C.; Flt. Lt. G. Nicholletts, A.F.C.; Flt. Lt. C. Rappley; Flt. Lt. M. Reidy; F/O. C. Ryley; Sqdn. Ldr. R. Sanceau; Sqdn. Ldr. I. Thomson, A.A.F.; Sqdn. Ldr. D. Townesend; Flt. Lt. G. Stanley-Turner; Air Commodore R. Verney, O.B.E.; Commodore the Rev. J. Walkey, K.H.C.; F/O. J. Weston; Flt. Lt. A. Wheeler; Sqdn. Ldr. A. Wray, M.C., D.F.C., A.F.C., etc.

AIR POST STAMPS

By DOUGLAS ARMSTRONG

(Editor of "Stamp Collecting")

Trans-Tasman Flight Stamps

Another epic flight, the crossing of the Tasman Sea from Australia to New Zealand and back, by the Australian airman Ulm, is commemorated in a special stamp provided for use on the mail despatched on the return trip by the New Zealand postal authorities. It is not likely to prove especially scarce, because there were actually 120,000 prepared, although an unsold balance is said to have been destroyed after the flight had taken place. Flown covers showing the small circular violet cachet struck upon the letter itself and franked with the distinctive air mail stamp are being offered at about 2s. 6d. apiece and unused specimens of the stamp itself at 1s. 6d., at present. It takes the form of an impression in bright blue from the plate of the existing 7d. air mail stamp of the Dominion, bearing in addition a three-line overprint in bronze blue Roman capitals reading: "Trans-Tasman-Air Mail—'Faith in Australia,'" the name being that of the aeroplane with which the two-way flight was accomplished. The Ulm stamp was on sale from about the middle of January to February 9 last. This is the first commemorative air stamp to hail from New Zealand.

Decade of Air Transport

To mark the completion of ten years of civil aviation in Soviet Russia, a set of five particular postage stamps has recently been put on sale in that country, the subjects of the vignettes illustrating aeroplanes passing over various enterprises connected with the Five Year Plans. The 5 kopeks, in blue, shows blast furnaces in operation, the 10 kop. green a group of oil wells at Baku, and the 20 kop. red an agricultural colony. The great Volga Canal is seen in the 20 kop. design, printed in red, and finally a glimpse of the Arctic regions with an ice-breaker at work as the subject of the fifth and last value, 80 kopeks violet. These stamps, which are illustrated above, are finely printed by a photogravure process, 25,000 sets upon water-marked and 50,000 upon unwater-marked paper.

India's Air Stamps Passing

With the increasing public patronage of the air mail service the need for distinctive stamps as a means of distinguishing airborne correspondence becomes less, and several countries have already found it expedient to permit of the use of ordinary postal adhesives in prepayment of air post charges. India is the latest to abandon her supplementary air mail stamps, according to an official circular which states that when existing stocks are exhausted they will not be replenished. Already the 8 annas value is reported obsolete.

New Air Stamp Issues

For one set of air stamps that goes out of issue half-a-dozen others spring up in its place. Something like 65 new varieties have appeared during the past month or two, or are on the point of making their *début*. Latest additions to the air stamp collection include the forerunner of a definitive series from Chile in connection with the Trans-Andean air mail system in the shape of a 2 pesos denomination bearing a striking picture of aeroplanes flying over the top of the world, lit up by rays of light. Italy incorporates in a set of pictorial stamps commemorating the tenth anniversary of her annexation of the port of Fiume four values inscribed "Posta Aerea," and two for combined air postage and express delivery services. Aeroplanes passing over local scenes, such as the harbour of Tripoli, a mosque and an Arab encampment, provide the designs of certain postal propaganda stamps issued on the occasion of the Eighth Annual Trade Fair held last month at Tripoli (Italian North Africa).

Air Stamps at Auction

A new auction record for the "De Pinedo" air mail stamp of Newfoundland, in fine mint condition, was established last month, when a copy was sold for £390 at Harmer, Rooke's rooms. In the same sale a mint specimen of the "Hawker" stamp fetched £230, and a number of other excellent prices were obtained for air post stamps



NEW SOVIET AIR STAMPS: The five vignettes just issued, referred to below.

of lesser note, tending to show once again the truth of the adage, "the better the piece the better the investment."

On to the Apex

In just over four weeks from now the London International Air Post Exhibition (short title "Apex") will open its doors (at the Horticultural Hall, London), and present to the public a popular pageant of the air mail service from its earliest inception as recorded in stamps and flown missives. The whole of the available display space has, it is understood, been taken up by exhibitors from all parts of the world. An official exhibit by H.M. Postmaster-General will occupy the whole of one of the large annexes, and is to include some novel features of particular interest to air post collectors. There will also be an official postmark for letters posted at the temporary Exhibition post office.

Answers to Correspondents

London-Windsor Air Cards (P. B., Petworth).—The value depends as much on the colour of the vignette as the date of use. September 9 is the commonest date and olive-green and brown the least valuable colours. Prices vary from 5s. to about £5 for the scarce Royal purple cards and envelopes.

A Record Rolls Royce dividend

PROFITS of Rolls Royce, Ltd., for the year ending December 31, amounted to £216,726, an increase of £66,000 over the corresponding figure for 1932. A final dividend of 10 per cent. is recommended by the Board, making 15 per cent. for the year, and a bonus of 2 per cent. This is the largest reward so far received by the shareholders. Higher percentage rates were paid on a much smaller capital which existed before the war, but it should be remembered that in 1918 the company, through the capitalisation of part of its reserves, allotted a free share bonus at the rate of one for one. During the past year the "Kestrel" engine has been supplied in very large quantities for use in Service aircraft, and the "Buzzard" has been adopted as a standard Service type.

NEW COMPANIES REGISTERED

AIR TRIPS, LTD., Boughton House, 10 and 12, Church Road, Tunbridge Wells.—Capital, £300 in £1 shares. Objects: to provide aeroplanes, water-planes and air vehicles; to provide expert tuition for the training of air pilots, and to ply for hire for the transportation of people and goods, with aircraft of all kinds, etc. Directors: Pauline M. de P. Gower, Sandown Court, Tunbridge Wells; Dorothy N. Spicer, 30, Hanover House, Regent's Park, N.W.8. Secretary: Pauline M. de P. Gower. Solicitor: Sir Robert Gower, Kt., Boughton House, 10 and 12, Church Road, Tunbridge Wells.

THE SKY PUBLICITY (1934), LTD.—Capital, £5,000 in 2,000 10 per cent. cumulative preference shares of £1 each and 60,000 ordinary of 1s. each. Under agreement with Charles B. B. Maturin and William F. E. Briggs, and to carry on the business of advertisers by means of vapour emitted into the air from aircraft, etc. Solicitors: Zeffertt & Heard, 17, Coleman Street, E.C.

PUBLICATIONS RECEIVED

Memorandum on Economic Conditions in Siam at the End of the Year 1933, Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published April 5, 1934

- 24,942. VICKERS (AVIATION), LTD., and B. N. WALLIS. Cantilever wings for aircraft. (407,009.)
31,310. L. H. COATALEN. Rotary engines. (407,135.)

APPLIED FOR IN 1933

Published April 5, 1934

- 13,747. FAIREY AVIATION CO., LTD., C. R. FAIREY and A. G. FORSYTH. Air-cooling of internal-combustion engines. (407,216.)